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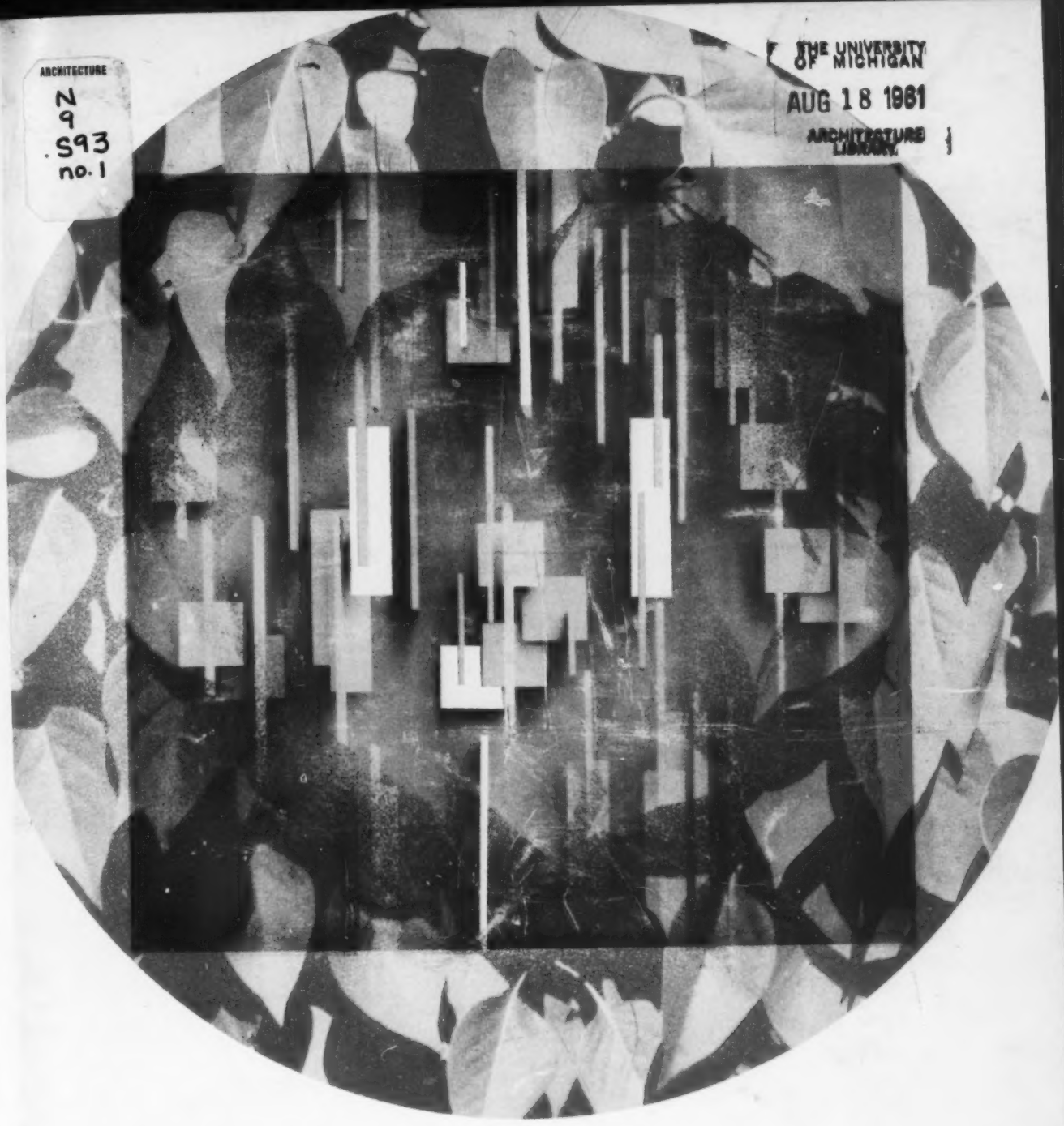

THE STRUCTURIST

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THE STRUCTURIST

No. 1 1960-61

Editor: Eli Bornstein
University of Saskatchewan
Saskatoon, Canada

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errata:

page 2. *illustration of* GIORGIONE, *date should read* ca. 1505

page 12. Footnote No. **9** should read after **The Eye Is Magic:** Art News (magazine), Vol. 59, No. 2, April, 1960. James R. Mellow: etc.

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MASACCIO: *detail of fresco, 1427, Brancacci Chapel of Santa Maria del Carmine, Florence.*

GIORGIONE: *Concert Champetre. ca. 1905. Louvre, Paris.*

REMBRANDT: *Bathsheba, 1654. Louvre, Paris.*

STRUCTURIST ART — ITS ORIGINS

Eli Bornstein

INTRODUCTION

In 1859 Charles Darwin published his *Origin of Species*. Almost a century later, in 1948, Charles Biederman published a book entitled *Art as the Evolution of Visual Knowledge*. Darwin's theory even 100 years after its appearance is still far from popularly accepted. Recently Dr. Herman J. Muller in an article entitled *One Hundred Years Without Darwinism*[1] pointed out how even after four generations Darwin's great scientific discovery is still not acknowledged here in America. Dr. Muller found that in most high school biology text books the word "evolution" is not even used and that less than half the high school teachers of biology teach evolution. This is shocking and unbelievable yet evidently true. It is not my intention to go into the reasons for the resistance to Darwinism here but to merely point out the tremendous lag in acceptance of evolution on the biological level. A similar situation could be found to be the case with the profound discoveries of Sigmund Freud made more than 60 years ago in the realm of psychiatry. It seems in fact that many of the greatest discoveries and additions to our frontiers of knowledge have dealt corresponding blows to our vanity and to some of our most dearly held illusions. Recovery and acceptance has thus always seemed to be painful and slow. Biederman's book boldly set forth the idea of evolution in art 12 years ago. It was to be expected that this idea in art would encounter no less similar resistance and attitudes of discomfort and annoyance than that of evolution in biology. Art, the stronghold of man's most precious vanities of all, was next in line for a re-alignment in the fresh light of analysis.

What is meant by evolution in art and what precisely is so objectionable about this particular word "evolution"? Evolution means a process of development or growth and infers continuity or progress. All ideas of evolution involve etiology, the search for causes or origins, and thus require a historical approach. Edward Hallet Carr in his book *The New Society* analyzes most clearly this issue. "Modern man is beyond all precedent 'history conscious' . . . We have lost (the) capacity to isolate ourselves in time; we have become incorrigibly historical in our outlook.[2]" As modern man looks back into the past out of which he came, he does so with the hope that an insight will be gained to aid his awareness of what may lie ahead. Conversely his concern for what lies ahead sharpens his insight into the twilight out of which he has emerged.

As a result of Darwin it suddenly became apparent that "Progress in history and progress in the natural world were different facets of the same process."[3] The idea of progress today is no longer as fashionable as it was when J. B. Bury in 1920 called progress "the animating and controlling idea of western civilization." Other theories of history like Spengler and Toynbee which adhere more to the idea of history obeying certain fixed laws, following cycles, or repeating itself from progress to decline, became more the fashion. However the idea of history as a process, as a continuing, non-repetitive process, is by no means dead. It has been greatly enlarged since the 19th century, and to discard progress completely, as the fashions may dictate, is not possible without discarding ideas of development or evolution as well. Without the idea of progress—meaning a conscious moving on towards something

GOYA: *Self Portrait, ca. 1810.*

CEZANNE:
Portrait of Joachim Gasquet
—detail, 1867-97.

PICASSO: *Woman with Pears, 1909.*

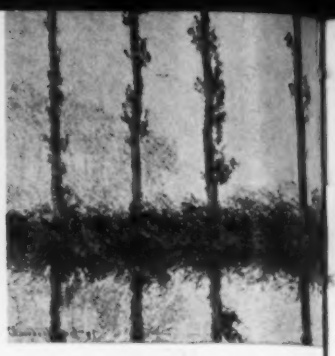
worthy of faith and endeavor—there is no history. "The unhistorical peoples are those who have no aspirations, those who do not look backwards because they do not look forwards. Faith in the future is a condition of meaningful interest in the past . . ."[4] "(Without) consciousness of the future, no history."[5] Objections raised to this outlook are embodied in the view that history is just chance occurrence resulting from blind forces, without pattern, and that we only project our pattern on to it as we like. Faith means commitment, and that is a dangerous step. Have we not all too often witnessed the most suspect judgment of all as the one which makes the loudest professions of non-commitment or impartiality, and that those who claim to be bound by no theories fill the vacuum with their own prejudices? Haven't the new insights that psychology and psychiatry have given us revealed that the most objective, the most free or impartial view is the one that is most consciously aware of all its subjectivity, its attachments, and its partiality, and which is most careful to check its subjective interpretations against that of others?

What has all this—history and evolution—to do with Structurist art? What has been said here as introductory is vital to an understanding of the foundations and origins of Structurist art. In other words, its particular orientation and attitude toward history, evolution and progress are a necessary background against which we can see its true character. This art rests upon a conscious relationship to the past, the present, and the future. Biederman's evolution theory served to turn a searching beam of light upon art history, the directions of the past and present, with a serious concern as to where it was going. This has meant the glaring intrusion of illuminating current issues and fashions which have influenced and dominated the present. The penetrating light has revealed an order or process through which man's art has evolved as visual knowledge of his objective world of nature, as well as knowledge of his visual mediums of creation. Biederman, as a major pioneer of Structurist art, pointed to a new direction of continuation in art. His own work, as we shall see, presents a positive advance along this new course.

Before proceeding to a brief survey of the origins of Structurist art, it may serve us well to clear the air of any possible misunderstanding on another point. We have already indicated clearly its fundamental commitment to the idea of evolution. Next we must acknowledge that there are different levels of visual art. Therefore it is imperative to distinguish between them. These levels represent differences of focus of attention, differences of interest and function. There is art in education; art as occupational therapy in rehabilitation; art as amateur or leisure interest; art as professional or semi-professional occupation in the commercial and applied arts and crafts; art as decoration; art as fashion, or commodity; art as primitive expression; art as creation; etc. These levels are not necessarily exclusive. They *are* related, yet we must distinguish between their differences. There are numerous art activities and artists that are consciously preoccupied with particular problems. One distinction that concerns us here, for example, is the particular interest in art only as self-expression—the expression of self as the primary end. This interest is not consciously concerned with the history, progress or evolution of art. All levels of art, in their particular context, can have value or not, be sincere or not, and meaningful or not. A concern with one kind of art need not necessarily deprecate other kinds. However, each level operates within the limitations or possibilities of its own par-

COURBET: *Roe-deer in a Forest, ca. 1860.*

Nature Photograph: E. Bornstein.



MONET: *The Four Poplars. 1891. The Metropolitan Museum of Art.*

ticular concern. The kind of art that concerns us here is that level of art creation that contributes to man's visual knowledge and the further development of his art, and *is* consciously concerned with the problems of its growth.

ORIGINS OF STRUCTURIST ART:

Let us now look briefly at the genealogy of Structurist art to see from where it springs and pause to consider its progenitors. When the magnificent pageant of man's art of the past passes before our eyes, obvious changes and differences are discernible as having occurred. These changes are not seen as accidental or arbitrary but are seen as being determined. Determined that is by what preceded it and by its orientations to its own past, present and future. If we specifically look, for example, at the development of painting, the Renaissance from Masaccio to Leonardo to Giorgione, we see significant changes in the painter's use of value to create the illusion of volume, modelling, light and dark. We perceive the emergence of perspective and a conscious attempt to reproduce the retinal image of the eye upon the two-dimensional picture plane. In other words, the Renaissance artist attempted to create the illusion of the actual three-dimensional world of space, light, and objects on his canvas. Unquestionably this was one of the most important re-births of art, if not the most significant revolution in art that occurred since antiquity. The development of painting continues along its course. The pageant moves from the last great achievements of Realism in the 19th century with Courbet to another tremendous change. With the invention of photography after Courbet, the final curtain was rung down on the powerful drama of Realism. We are next confronted with a glorious burst of light and color by the Impressionists. We can perceive what has slowly moved and built up to this next gigantic revolution in art. The changes noted are first the further emergence of an awareness of the uniqueness of the painting medium itself—its two-dimensionality or linear surface. Next we note the abandonment of the use of value to create the illusion of light and form and space. This is left to the more perfect recorder of light, the camera and the new camera-artist. Instead we see the use of color to create light. From the structure of the retinal image of the Renaissance to the structure of the color image or light itself. Monet stands out here as the great innovator. In our analysis so far we must note the emphasis upon those artists that were concerned with their objective visual world—the visual world of nature as their primary concern as opposed to fantasy, etc. As we shall show presently, this is the lineage which interests us, but another distinct lineage also is about to make its appearance.

A great split, a pronounced schism, a bifurcation of our ancestral tree next appears. This split that occurs after Impressionism can be characterized as the continued pursuit of visual knowledge of nature and art on the one hand, and on the other, more and more the pursuit of subjective interests in individual feeling or expression. Perhaps another way of describing this fundamental division that has affected all art since Monet is this. One is concerned with Art and Nature as something greater than individual man himself, the other places individual Man, his own ego and unconscious self as being of greater importance. This sharp contrast of focus between the two branches increases as we move toward the present and as they grow apart in different directions. For the sake of distinction let us label the one direction STRUCTURIST, and the

A 30

CEZANNE: *Chestnut Trees at the Jas de Bouffan. 1885-1887. The Minneapolis Institute of Art.*

MONDRIAN: *Apple Tree in Blossom: ca. 1911-12. The Hague: Municipal Museum.*

other EXPRESSIONIST, and trace their contrasting movements briefly from Impressionism.

The Structurist line moves from Monet to Cezanne who makes the next great step from the broken or divisionist color image of Impressionism to a further quest for structure and to broken planes and finally, in his last decade, to the two-dimensional color-planes or what can be called the birth of Cubism. Cezanne emerges here as the towering patriarch of all that follows along this line. From him there follows Cubism, the French varieties and Mondrian's. This direction continues with the Neo-plasticism of De Stijl, Suprematism of Malevich, and Russian Constructivism until our own present time with what is called Structurist art itself.

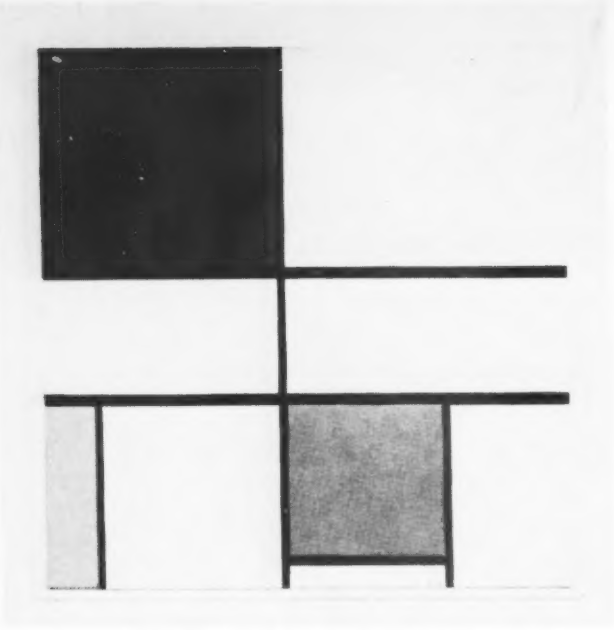
Now along the Expressionist direction, from Impressionism appears what are loosely termed the Post-Impressionists, the Linear-Impressionists, the Symbolists – i.e., Van Gogh, Lautrec, Gaugin – and the numerous other related directions that follow; Fauvism, Expressionism, Dadaism, Surrealism, Kandinsky and Non-objective art, Abstract Expressionism, Automatism and Action painting bring us to our present time.

It is of course true that there were numerous painters who were partially involved in both lines of development, some who vacillated between the two or who tried to achieve a compromise or mixture of both. Nevertheless the essential genealogy—though greatly condensed here—and its progenitors have been briefly indicated. Perhaps more needs to be said about the basic differences between the two lines of development and their respective frontiers now visible.

The Structurist view accepts man as capable of expanding his visual knowledge of nature and art ever further. In its view art is not through with nature which is infinitely great, but extends man's vision towards a new vision of nature and art. Also it is vitally concerned with the future of Man and Society.

The Expressionist view accepts man as its center of concern—the psychological, the unconscious, the irrational, the sensuous, subjective, internal man. Art is used freely as a medium—divorced of conscious ties to objective visual nature or history—to express this conscious pursuit of self-contemplation. This attitude is exemplified presently in many ways in the Beatnik artist, and the current "Yen for Zen."[6] This attitude is anti- or non-historical in outlook and implies in many ways a total disengagement from the temporal processes of historical as well as social life. It does not wish to be entangled in dealing with relatives, the relatives of history, of society, etc. It is indeed an attitude of dis-affiliation. The contrast I have drawn here is not meant as black and white—as either/or—for in reality the Structurist is certainly concerned with the inner man, with the creative process and intuition. The Expressionist on the other hand is certainly concerned with particular aspects of visual knowledge. The contexts of their interests however *are* different. This sharp contrast is necessary to enable us to see clearly their basic differences in emphasis, and for an understanding of their relatively opposing directions.

This conflict of directions, this dilemma of opposing courses, involves many relative problems. The resolution is by no means a simple one. We cannot expect Madison Avenue or the popular mass-magazines to give us any clues to the dilemmas facing art or society today. Neither can we look to the "organization man" or the "status seekers" in art for the answers. They are not engaged in a search for real art values. Rather they reflect the current dilemmas and even feed upon them. We can only continue our search, through free



MONDRIAN: *Composition with Red, Blue and Yellow*, 1935.

inquiry, for clear analyses of the conflict and endeavor to seek out all the real insight—independent of current fashions—that can be found.

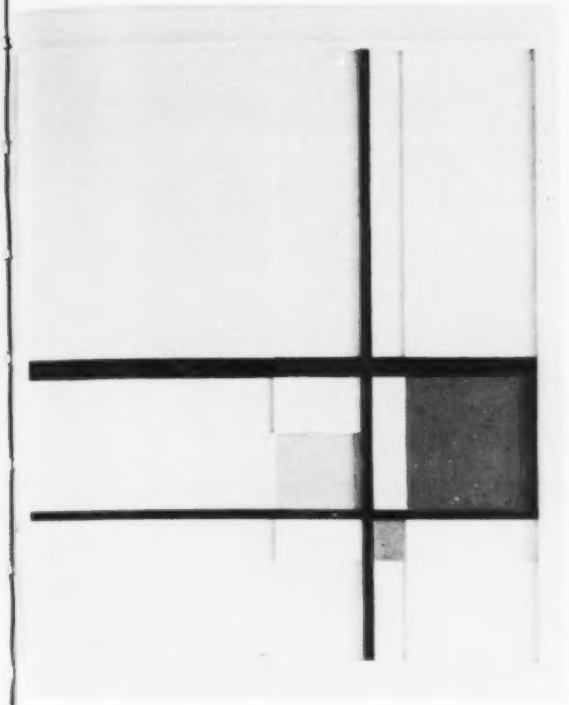
We will return again to this fundamental dichotomy in art. Let us for the moment return to the panorama of art history. We note another important and obvious change as it spreads before us. The evolution of subject matter can not pass unnoticed. The change from religious subject matter, to secular, to heroic, and idealized, to intimate realism, to a haystack bathed in light, to apples and mountains translated into color planes, until subject matter as such is shattered and falls away completely. With Mondrian on the one hand and Kandinsky on the other, non-objective or abstract art itself emerges. We witness, in fact, an arrival at the threshold of what Walter Pater described as the aspiration of all art. "All art," he said, "constantly aspires towards the condition of music."[7] He meant the abstraction and invention of music which was liberated from imitative subject matter centuries earlier. With this liberation from the mimetic, to the abstract, to the inventive has emerged the crucial problems of content, meaning, substance, and medium.

Numerous articles are now appearing which show more and more awareness of this problem and countless complaints are sounded at various levels about this prevailing condition of abstract art. For example, a recent article by Rudolf Arnheim shows serious concern over some of the emptiness of the "stunning effects" of much of the art that is being produced in prodigious quantities today.[8] He points to some of the "widespread disorientation" and the "absence of criterion." He bemoans the fact that there is no content and that where there is no content there can be no meaningful form.

Indeed, has art travelled its glorious course from the earliest cave painting to end in a cult of personality, in a preoccupation with the ugly, and as a precious titillation of the senses for its own sake? Is art no longer concerned with beauty or with nature?

Many other voices appear today that cry out for a return to earlier forms or subject matter. Alas, is this really possible? In the evolutionary view it is like crying out for a return to infancy or childhood. It is like the wish to return to the distant shores we have left behind while the current sweeps us on. Is it not beyond our power to return and yet to continue on the journey begun thousands of generations before us?

Perhaps when we have moved as far as the present frontiers of Structurist and Expressionist development, the questions themselves may change. Let us proceed further along the Structurist lineage. The three direct progenitors of this line that stand above all others are Monet, Cezanne, and Mondrian. An understanding of these key figures is imperative to the foundations of Structurist art. When I was a student, my teachers insisted that Monet was a second-rate painter and not very important. I coud not understand or accept this view, without knowing why, for this judgment belied what even my inexperienced eyes saw. It is only recently that Monet has been recalled from the shadows of the unfashionable and he is now revived as the precursor of Abstract Impressionism.[9] This same kind of substantiation or attempt at securing a tradition has occurred even more often with Cezanne, whose significance has been heralded for numerous highly questionable reasons. Of Mondrian the same can be said. One of the important contributions made by Biederman was to clarify and show the real importance and significance of these three artists. Simply enough, and yet so unique today, much of this was accomplished by returning



JEAN GORIN, *Composition in Relief*, 1935.

to all the writings and direct quotations available that were made by these artists themselves. This cut a swath through the many interpreters, critics, and false prophets that surrounded them. Much literature abounds that reveals a free use and analysis of these artists without much concern for accuracy as to what these artists themselves knew and said they were doing. Cezanne and Mondrian especially, were very communicative on these matters and left much material. *Letters on the New Art*, 1951, and more recently *The New Cezanne*, 1958, both by Biederman give some of the most revealing analyses of these three artists to be found.

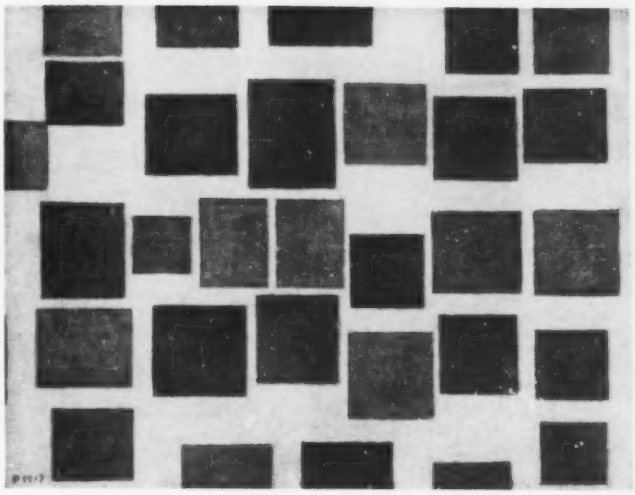
Mondrian is now seen to have been the only artist to have carried Cubism to its logical conclusion. Many others followed it part of the way or used it in some way, but all others stopped somewhere short of further continuation. In accomplishing this singular advance he also brought two-dimensional painting, along the Structurist line of development, to an end. Malevitch's painting White on White (1918) was another emphatic acknowledgement of this same conclusion. Rodchenko is said to have reached a similar termination with his painting Black on Black (1918). He went one step further by painting one canvas all red, another all blue and another all yellow as a consummate finale. Thus the painting medium was carried to its ultimate reality—the two-dimensional surface itself—and painting arrived at a conclusive end. Though both Mondrian and Van Doesburg intimated its portent, neither of them actually accepted this inevitable end. Mondrian, after his most important period of 1917 to 1919, moved increasingly in the direction of creating an absolute ideal beauty, divorced from nature and in effect ending art itself. He did not however succeed in either denying nature or, by any means, ending art. The end of painting, in the Structurist descent, rather gave way to a new progeny. As we shall soon see, the art that was born out of Mondrian is neither painting nor sculpture. For the first time a synthesis of both that is yet neither. It uses the qualities of both but extends them further in a new unity. It uses actual color-forms or planes in actual space and light. It is the end of illusionism in art and the beginning of an actual, palpable three-dimensional color-in-space art .

The development of sculpture, though not dealt with here, can be briefly accounted for as having followed behind that of painting, being directly influenced by it, from the Renaissance on. The last significant movement in sculpture occurred in Russia around 1913 and was called Constructivism. Gabo and Pevsner, its leading figures, acknowledged their debt to Cubism in developing their abstract constructions using the new industrial materials like metals and plastics. Although Constructivism itself has led mostly to numerous Expressionist directions in sculpture, it did serve to offer the key to the young Structurist art. This key was the three-dimensional building methods. Thus the new Structurist art appeared as an outgrowth of painting into the three-dimensional space of sculpture. One of the earliest pioneers in this direction was Jean Gorin of France. As a young contemporary and acquaintance of Mondrian and others of the De Stijl group, as well as the Pevsner brothers, he began to construct Neo-plastic compositions in relief. His earliest reliefs began around 1926. These early works reflect the direct influence of Neo-plasticism and Constructivism. The second pioneer was Charles Biederman of the U.S.A., whose

CHARLES BIEDERMAN, *Structurist Relief*, 1958.

constructions began twenty-three years ago, in 1937. Biederman has carried the development of this work far beyond any ties to either Neo-plasticism or Constructivism and his work has emerged uniquely as a new and positive direction in art. There are now a number of young artists in the U.S., Canada, England, and Europe that are seriously engaged in Structurist art. They regard it as a vital and meaningful continuation of art and yet as a new medium in its infancy with unforeseeable possibilities for further development. Their outlook, as a new beginning out of a great heritage, is in keeping with the aspirations for a new and better society.

What about Nature? How is Structurist art related to Nature? It is not mimetic or representational of objects in nature. Neither does it use nature as direct symbolism, allegory, or metaphor. It is not directly concerned with mathematics or intellectual gymnastics. Where, then, does its life, its vitality lie? Its relationship is to the *structural process* of nature. Nature as the fullest and richest of all sources of actual color-structure in space and light is indeed used, but not to reproduce or abstract from its visual image as in the past. What *is* abstracted from is Nature's building-process, its growth-process, its forming-process, or, in other words, its process of creation. It is involved in the visual "how" of nature, not the visual "what". This is indeed a new orientation to Nature, and consequently a new way of looking at the art that springs from it as well. It is in keeping with what Cezanne said: "Art as a harmony parallel to nature."[10] Louis Sullivan put it in a similar way " . . . we, in our art, are to follow Nature's processes, Nature's rhythms, because those processes, those rhythms, are vital, organic, coherent, logical . . . (and thus) give to our art a power, a vital, a creative beauty, that shall make with Nature a harmony and not a dischord."[11] The structural correspondence sought in Structurist art to Nature's creative process, however, must take place at the particular stage of development of the art itself. This new art still works in a limited three-dimensionality with a limited means in order to approach and comprehend the infinite complexities of full three-dimensional Nature. Let us take for example a tree or flower. Here no

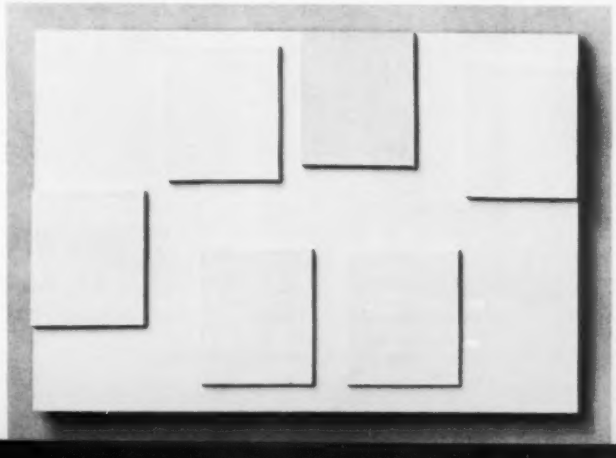


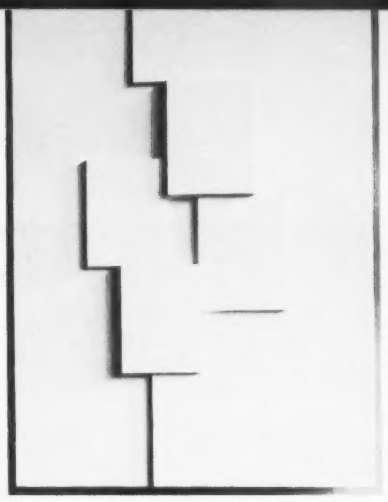
MONDRIAN: *Composition No. 3 with Color Planes, 1917. The Hague: Municipal Museum.*

Structurist relief actually imitates the actual structure of these but rather translates and abstracts from their complex structural order into the very limited, primitive means of the relief. Only by a gradual process of development can understanding and control be accomplished and further progress towards the complexities of Nature be achieved.

There is yet another point worthy of mention. Structurist art has learned and grown out of the past art, but it has also learned from the advances of knowledge in other fields as well—such as science and philosophy. That this is an age of science has now become a commonplace statement—especially since the launching of Sputnik! For all that, it is none the less true. A useful method of approach to the beginning of a new body of knowledge where much remains uncharted by human experience, has

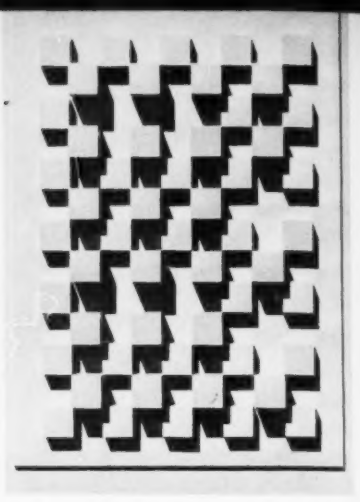
ELI BORNSTEIN: *Structurist Relief, in white and yellow, No. 3. 1957.*





ELI BORNSTEIN: *Structurist Relief in white, No. 5. 1957.*

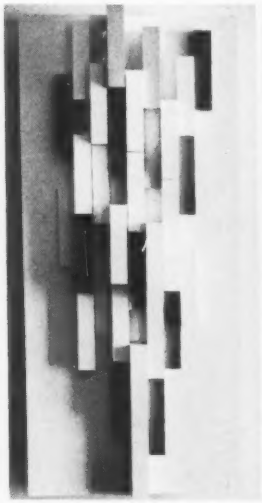
ASPASIA VOULIS, *Structurist Relief in white, 1952.*



ASPASIA VOULIS: *Structurist Relief in white, 1952.*

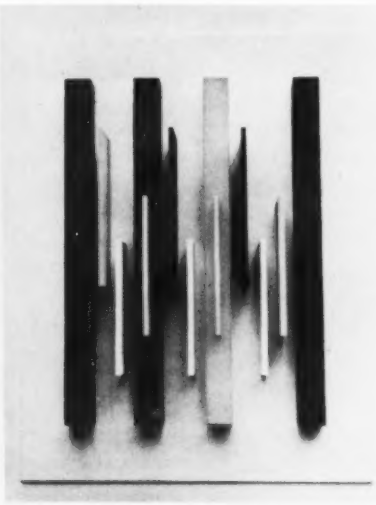
proven to be the empirical or pragmatic approach. John Dewey believed that the "method of scientific inquiry can be applied to all aspects of human experience . . . (and) that there is nothing necessarily outside its domain."[12] He held that scientific method as a process of inquiry can be a hand-maiden to art experience and creativity though, of course, only instrumental and not an end in itself. The scientific method since Galileo has made an increasing number of inroads into many areas which have held out in vain as forbidden territory. As a pursuit of knowledge—in this case creative visual knowledge—the scientific method is a meaningful tool involving observation, hypothesis or theory, deduction, and verification or correction leading to further observation, theory, etc. "Creativity neither exists nor functions in an intellectual vacuum; it is contextual; it feeds upon product, it nourishes process, and it is ultimately dependent upon having ends-in-view."[13]

We have not dwelt very much here upon the Expressionist line of development in art after Impressionism. Its present position is now without question the fashion. From Kandinsky we noted the beginnings of Abstract Expressionism or non-objective painting. This line of development has by no means reached the conclusion that two-dimensional painting has terminated. The Expressionist line emphatically proclaims that it is continuable. A recent publication as spokesman for the position of Abstract Expressionism asserts itself in its very title *IT IS*. The Structurist responds with IS IT? And is seriously inclined to think that it isn't, even along the Expressionist line. How do we know for certain that the present Expressionists' concern with the unconscious self, and the subjective individual creative act may not contribute knowledge of some kind for reasons



ELI BORNSTEIN: *Structurist Relief in white, blue, and yellow, No. 16, 1958. Collection F. S. Mendel, Saskatoon.*

Nature Photograph: E. Bornstein.



ASPASIA VOULIS: *Structurist Relief in white, red, yellow, and blue, 1955-56.*

Nature Photograph: E. Bornstein.

outside of painting or art itself? This we do not know. The future alone will reveal its true value and determine its survival. For we do know that whatever the approach, it cannot escape history! Survival will depend on development and pushing forward the frontiers of knowledge toward new vistas. The Expressionist line need not necessarily be dead in order to substantiate the validity of the Structurist line. Structurist art stands on the evolution of its own values and will only survive as such. It does not need the default of other values to make its own significant. However, objections arise when there is a confusion of values, of levels, and when one line develops at the expense of the other through artificially created fashions which mislead and distort the real issues. Conflicts arise when there is a tragic failure to make distinctions.

This all too brief glimpse into the majestic procession of art from Massacio to Mondrian has led us along the Structurist line to Structurist art itself. We have observed the growth from the limited use of line and color to create form-illusion, space-illusion and light-illusion, to the full use of color as light. Then we saw the emergence of the color plane of Cezanne carried to its two-dimensonal conclusion by Mondrian. Finally, the new synthesis of the color of painting and the actual form and space of sculpture come forth in the new medium of the Structurist relief, where the color-form creations appear in light, parallel with the harmony of Nature's own creations, and where the glow of color in actual space and light is a unique quality similar to that in nature but which can not be painted with pigment on a canvas.

Goethe wrote an essay on Nature that speaks well for us here. I discovered it in a biography of Sigmund Freud, who was greatly influenced by it when he heard it as a young man. What Goethe says might have been said by Leonardo, Beethoven, Monet, Cezanne, or Louis Sullivan.

It also expresses the commitment of the ment of the Structurist.

> "Nature! We are surrounded by her, embraced by her, impossible to release ourselves from her . . . She creates ever new forms; what exists has never existed before; what has existed returns not again—everything is new and yet always old . . . One obeys her laws even if one resists them; one works with her even if one wants to work against her . . . She is everything . . . She is harsh and gentle, lovely and fearful, weak and all-powerful. All is forever present in her . . . She has set me within. She will also lead me without. I commit myself to her."[14]

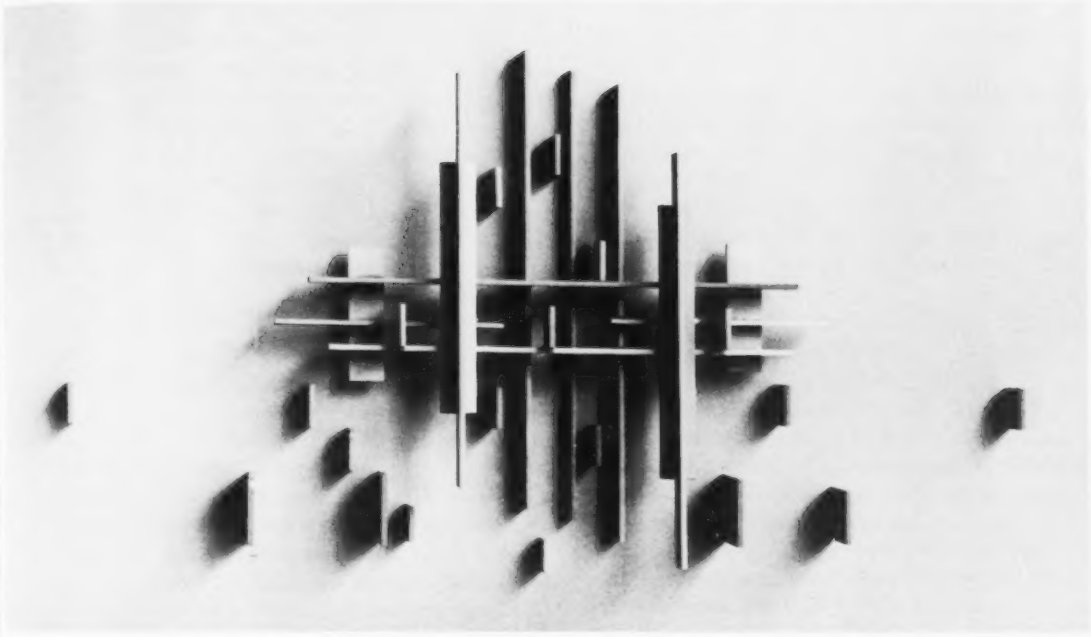
A quiet epilogue, a whisper that wants saying. This commitment to Nature is as well a commitment to Man in Nature and to the whole human enterprise.

Saskatoon, February, 1960

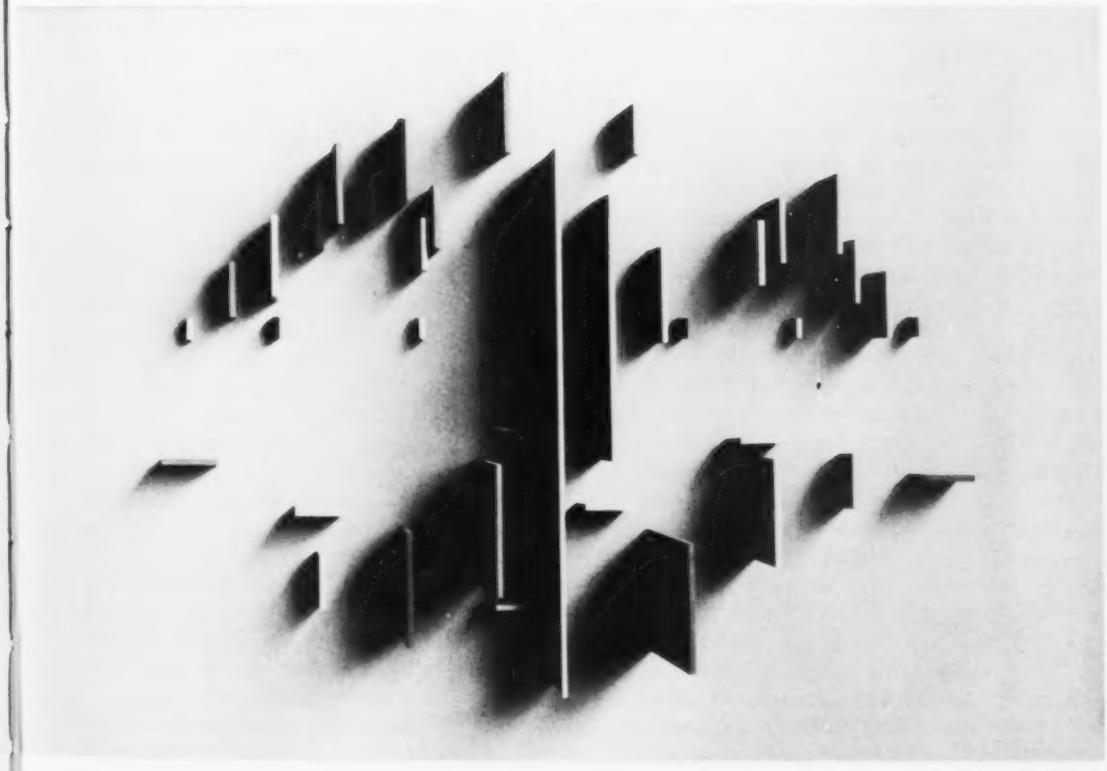
FOOTNOTES

1. Dr. Herman J. Muller: **One Hundred Years Without Darwinism**; The Humanist (Magazine), 1959, No. 3, p. 139. **2.** Edward Hallet Carr: **The New Society**; Beacon Press, Boston, 1957, pp. 1-2. **3.** Ibid, p. 3. **4.** Ibid, p. 118. **5.** Ibid, p. 2. **6.** See the article by John M. Morris: **The Yen for Zen** in The Humanist (Magazine), No. 6, Nov.-Dec., 1959, p. 339. **7.** Walter Pater: **The Renaissance**; The Modern Library, N.Y., p. 111. **8.** Rudolph Arnheim: **Form and the Consumer**; College Art Journal, Fall, 1959, XIX, 1, pp. 2-9. **9.** Three recent articles on Monet illustrate the blatant abuse that this artist continues to receive—even in the guise of adulation: Larry Rivers: **The Eye Is Magic**; Art Mellow: **A New Look at Monet**; Arts (Magazine), Vol. 34, No. 7, April, 1960. Paul Goodman: **The Passion of Monet**; Arts News (Magazine), Vol. 59, No. 6, Oct. 1960. **10.** Chas. Biederman: **Art as the Evolution of Visual Knowledge**; Red Wing, Minnesota, 1948, p. 279. **11.** Louis Sullivan: **Kindergarten Chats**; Wittenborn and Co., 1955. **12.** Dr. George Geiger: **The Centennial of John Dewey**; **The Scientific Quest for Values**; The Humanist (Magazine): Sept.-Oct., 1959, No. 5, p. 260. **13. Dewey and Creative Education**: (A symposium) Part 4, **Creative Inquiry**; The Saturday Review, Nov. 21, 1959, p. 23. **14.** Helen Walker Puner: **Freud, His Life and His Mind**; Dell Publishing Co., N.Y., 1959, pp. 48-49.

Nature Photograph: **E. Bornstein.**



CHARLES BIEDERMAN,
Structurist Relief, 1957.



CHARLES BIEDERMAN,
Structurist Relief, 1958.

THE REAL AND THE MYSTIC IN ART AND SCIENCE

Charles Biederman

Piet Mondrian is the great painter since Paul Cezanne. Recently his fame became worldwide. Yet a most unusual aspect of this artist's views has been ignored by the many who acknowledge him. In his final and Neoplastic period he claimed that the "evolution" of art had already ended, and that art as we know it was approaching an "abyss," after which it will disappear. To say the least, this entails as drastic an outcome for art as one could imagine. Yet not one of his now numerous admirers has voiced the slightest alarm or even expressed surprise. Not one has apparently found it necessary to examine the basis upon which this very serious contention rests. Either his admirers have resigned themselves to the demise of their art or else have not taken this notion seriously. The latter is probably the general attitude, since not a single artist or writer has publicly joined Mondrian in his prediction. This attitude is an extremely serious error. Neoplastic art is indeed oriented to achieving the end of art as we know it, as Mondrian reiterated often enough, but which has been ignored. Since I have demonstrated elsewhere,[1] by structural examination of the art, that the Neoplastic prediction of an "abyss" is correct, here the primary concern will be with the theoretical foundation on which Neoplasticism rests this and other of its contentions. The reason for concentrating on this form of art rather than on any of the others that prevail is that it brings into the light of analysis neglected problems that face all art today.

Nothing has done more to obscure Mondrian's achievements than his own writings. There are two reasons. First, his great contributions to the development of the new direction took place in the period ending 1917, which work the artist was to reject in preference for the Neoplasticism that followed.[2] Second, the problem of certain obscurities in Mondrian's logic exists partly because his most basic assumptions only appear clearly in early writings. The writing he did during the last two decades of his life is largely a continuous elaboration of conclusions stated in his earlier formulations. Terms change, expressions become more involved, but his general position remained as at the beginning. If his art seemed to change, it is only the result of his effort to bring it into correspondence with his theories, which remained basically unchanged. Certain fundamentals of his theory, however, he was never to elucidate. The character of his beliefs absolved him of the necessity. Nevertheless, these beliefs will have to be understood. Moreover, pivotal terms like nature, art, reality, were used in ways that led to glaring contradictions.

Part I

What were the general arguments Mondrian employed to attain his view of reality? The nature we experience with our eyes is "twisted;"[3] in later writings he used the term "capricious." Nature, he noted, is forever changing and so forever in a state of disequilibrium. This "indetermination" of nature leads to the "tragic" quality which also characterizes all art derived from this "optical" nature. This aspect of nature, therefore, provides an erroneous reality for art, being but a "veil" shielding from our awareness a more profound "universal" reality. It is necessary to look "through" optical nature.[4] Then "nature vision," which gives the "natural reality," gives way to "abstract reality," which gives the "abstract image."[5] "Capricious" nature is then replaced by a perfect, determinate reality. The ever-changing imperfections of the natural are replaced by the unchanging perfection of the absolute. The passage of time is without effect upon this universal reality.[6] The "true" reality of "nature" is timeless. Mondrian thus established two different aspects of nature. There is the imperfect *visible reality* contrasted to the perfect *invisible super-reality*. One is "capricious," "indeterminate," a merely "corporeal" relation of form. In the other, forms are "dissolved" leaving "rhythm . . . alone."[7] There is now a "pure plastic vision" which leads to "pure abstract relations,"[8] a timeless, universal, absolute reality. The "twisted" *form relations* of the "natural" are replaced by *pure relations* alone. We have thus arrived at the "true," the super-reality which the imperfect forms and colors of visible nature "veil" from our aware-

ness.[9] We "break completely," Mondrian flatly declares, with "optical vision."[10]

For confirmation of his view of art, Mondrian appealed to the example of modern science. Repeatedly he states that the new "objectivity" of art, as opposed to the "subjectivity" of figurative or natural vision, is similar to that practised in science.[11] Both fields, he says, seek an "abstract" reality.[12] The reality which art seeks is that which science has "already attained."[13] Does not science see "through" the natural vision? Does not the scientist, particularly the physicist, reject the optical vision of nature as a mere illusion which shields the true reality from us? Does not science overwhelmingly demonstrate that the atomic view is *the* reality, a super-reality? Does not science also establish two views of nature, one of illusion and one of reality? Does not this reality go beyond form to deal with relations, atomic relations, as the supreme structure of nature? Is not a false, visible reality replaced by a true, invisible reality? In short, does not science produce an abstract reality, the optical replaced by the abstract, *form* relations by *pure* relations? Science does indeed seem to confirm Mondriaan's Neoplastic view of reality.

During the first two decades of our century, the last years of which saw the Neoplastic theory formed, there occurred the tremendous discoveries of science into the intimate structure of nature. No less than empirical proof seemed to reveal that optical appearances were but a "veil," beneath which resided the true reality of nature. Science conveyed this knowledge to us with instrumental means, the senses alone being wholly inadequate to discern the new reality. All this stood the test of verification, since the scientific method is open to instrumental sensory inspection by anyone. Verification of Mondrian's reality assertions, however, is impossible. They are personal beliefs, bereft of sensory verification open to anyone. This implies some critical decisions. Either we must regard as arbitrary any reality view not supported by empirical (sensory) confirmation, and Mondrian denies the only such confirmation open to art—the optical reality—or else we must deny the necessity for such references altogether. If this latter view prevails, the consequences are disastrous. Nothing will prevent anyone from claiming any notion of reality he pleases, and maintaining that it too is veiled by sensory nature. In this situation, since the artist is without empirical or sensory confirmation, without the extra-neural instruments of the scientist to go beyond the sensory sensation, *all reliable means for establishing reality criteria cease to exist.* It then becomes impossible for *any* artist to ascertain the validity of any other artist's reality view, including his own. Art has become introverted. (Art has become an "inwardness," wrote Mondrian, an "interiorization")[14] The artist is free to conjure whatever reality he pleases, seemingly beyond the reach of inquiry by all others. This is precisely the condition of art throughout our century.

If Mondrian appealed to science for confirmation of his Neoplastic reality, in actuality he led art in precisely the opposite direction—arbitrary determination of nature's reality. This artist, it is necessary to note, matured under the severe canalization of Calvinist dogma with its universalism. Later, and for the rest of his life, he was to look to Oriental and other forms of mystic beliefs. All these searches for absolutes are of a piece with Neoplasticism. In this connection our understanding is furthered by awareness of the repercussions that followed the great scientific discoveries early in our century. If science was producing spectacular glimpses into the intimate structure of nature, considerable confusion arose as a result. Both in and out of science there were those who were discovering idealism, universalism, spiritualism, religionism, all said to be confirmed by the new scientific discoveries of nature structure.[15] Such interpretations left a deep mark on both science and art. Artists were embracing mysticism, religion, occultism, magic, and many in science itself were adopting similar attitudes. It was then not difficult for Mondrian to regard much "scientific" talk as substantiation of his own views, even to the extent of asserting that science confirmed "theosophical doctrine."[16] Art "discloses," he concluded, what science had already discovered, that the senses "veil" the true reality;[17] art is like science.[18]

One has to note, then, that there is not some one scientific attitude. There are a number of such views, just as there are many views of art. It is necessary, therefore, to discern the

view of science to which the particular scientist or artist ascribes. By denouncing the old security in the senses, the instrumental perceptions of scientists opened the gates to every conceivable, ethereal interpretation of reality, including some made by eminent scientists.

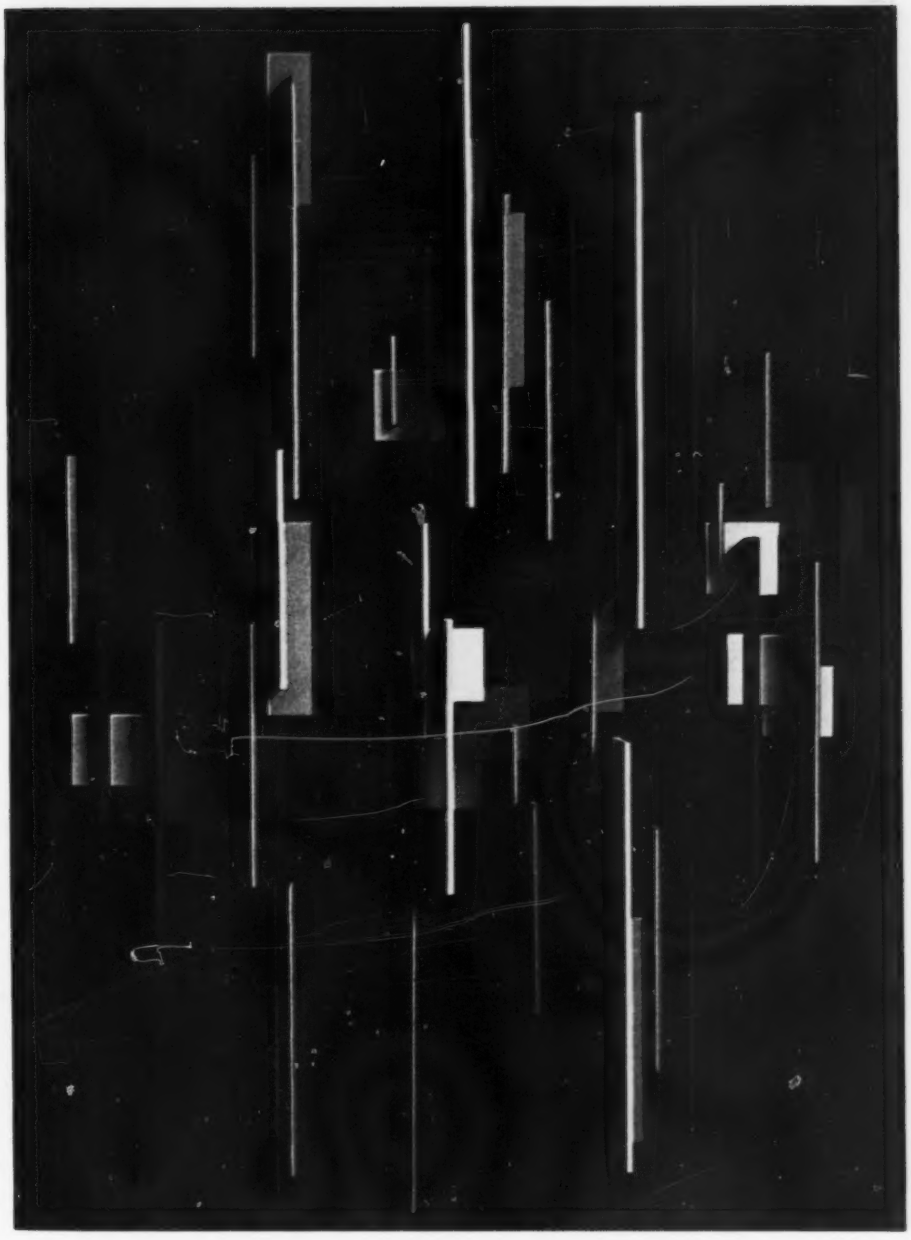
It is impossible fully to appreciate the situation that prevailed, unless one realizes the tremendous upheaval that occurred when such a powerful instrument as scientific perception, placed an invisible and verifyable nature at the very core of reality itself. This upheaval opened the way to every arbitrary interpretation of God and nature, which still continues even among scientists. After all, an invisible reality has endless speculative possibilities, especially for those eager to grasp them. In this climate of verbal speculation, Mondrian's views were hardly unusual. It is then understandable that Mondrian should ask why art must "continue to follow nature" when "every other field" no longer did so. He was referring not only to science but also to philosophy, architecture and the dance; also to the "metropolis" and such things as clothes and cosmetics. Why then, he asked, should not art become "non-nature" too?[19]

Obviously the artist, unlike the scientist with his instruments, is without extra-neural means for penetrating the "veil." Mondrian, along with other De Stijl artists, had an answer for this. He distinguished science as a "technological" mode of reality inquiry, in contrast to the artist's non-materialistic method of "pure thought."[20] The latter, it was implied, would serve the artist in the way extra-neural instruments serve the scientist. Thought alone, he asserted, aside from any sensory perception of nature, penetrates to the true reality which Neoplasticism makes manifest.[21] "Inner vision" having replaced "optical vision,"[22] the artist is able to act "without referring" at all to perceivable nature. He expresses himself directly in the new plastic reality.[23] In place of nature perception there is now only the act of "recollection." That is, with his "inner vision" the artist simply recalls the universal, unchangeable, pure plastic reality.[24] In such a manner the position of "non-nature" is attained.

Reality, in this view, occupies an autonomous existence within the artist's head. The difficulty is that under these circumstances it is possible for anything to manifest itself. Mere logic, however logical, only rationalizes, it offers no verifications. Such logic then, must assume the convenicnce of being autonomous in order to justify its reality view, a liberty Mondrian claimed. If Neoplasticism willingly compares itself to the effort of science, it cannot risk submission to that verification which any genuine science willingly accepts.

The above involves the problem of the artist's method of abstracting from nature. When the source is sensory, abstraction involves what the artist selects, relates and rejects in nature. Such was the source of Mondrian's pre-Neoplastic works. One can follow and evaluate the abstractions that led to the art. Later, however, he claims to negate all aspects of sensory nature. He proposes to go "beyond nature,"[25] by means of the "destruction" of what is "natural,"[26] that is, the destruction of the "three-dimensional," the "natural order."[27] He not only negates the object reality aspect, but also the very structural characteristics of nature. *In other words, he not only denies the forms which nature creates, but also the very method by which nature creates forms.*[28] This is a complete structural rejection of nature. Nature is found structurally erroneous because it lacks correspondence to an art structured on the basis of denying nature's structure in the first place!

What Mondrian does is to reverse the *natural* order of abstraction. Instead of beginning his abstractions from nature, he begins them from his art, to thus judge the structural reality of visible nature. This is accomplished by regarding the art and the logic attributed to it, as "autonomous" and, therefore, the supreme unchallengeable determinants of what constitutes reality. Essentially, such an attitude rejects any restraints contrary to the artist's personal reality predilections. All past forms of transcendentalist art, as well as "modern" art, have been rationalized in this manner. Yet one can say, without risk of reasonable contradiction, that no artist has ever been able to cease abstracting from nature, it being impossible.[29] *"Negating" the structural characteristics of nature is but one possible method for abstracting from na-*



CHARLES BIEDERMAN, *Structurist Relief, 1954.*

ture. Nature remains the genetic source for all forms of the abstractions of art, whatever the artist may do.

If it was Mondrian's intention to "exclude" all semblance of "form," what he actually did was to increasingly limit the characteristics derived from nature form. An artist can limit the dimensional structure of nature in applying it to his work, but he cannot exclude such structure completely unless he pursues this limiting process to its ultimate point of zero. Then, and only then, can all aspects of nature be finally excluded, but then art has disappeared too.

Part II

The question of abstracting from nature is basic to all problems of art. This problem has now become extremely difficult because abstraction itself is undergoing fundamental change, whether artists wish it or not. Few have confronted this change; result: confusion reigns everywhere in art. In the attempt to escape this confusion some have looked to science, others to philosophy. Mondrian did both. It was his belief that art is a philosophy, on the grounds that art is logic made concretely manifest.[30] If he equated the efforts of science and Neoplasticism, he did so by confining himself to a highly brief and generalized consideration of this relationship. It was to the tool of philosophy that he made his really extensive appeal for the logic on which Neoplasticism rests. Why then appeal to science at all? It would seem that the newly acquired great force of science served the role of giving substantiation and so credence, to the philosophical rationalizations of Neoplastic theory. If science does not substantiate Neoplasticism, according to the notion of science taken here, let us see if its philosophy does.

First of all it is necessary to note briefly the kind of changes that had been imposed upon the artist's method of abstracting from nature. From about 1880 a clear departure was made from mimeticism towards a new view of nature as reality. This was first effected by Claude Monet, who saw nature primarily as a process of color structure. *Nature as the structure of particular objects now begins to be replaced by nature seen as a general process of creative structure.*[31] It is Paul Cezanne alone who truly continues and completes Monet's discoveries by making them thoroughly conscious.[32] He alone takes Impressionism further. He does so by expanding the structural use of color, by extending its concern into the full structural complement that characterizes nature as *optical vision*. Where Monet concentrated upon the structure of color, Cezanne discovered that for the painter color gave the structure of form and space. He was then prepared to make his final and great discovery, that the new structural concern revealed nature's fundamental aspect as a creative structural process. Before nature, he exclaims, he seeks "knowledge only of creation."[33]

If Monet spoke of making "transpositions"[34] from nature, Mondrian of "transforming"[35] nature, Cezanne would make "translations"[36] from nature. As the music composer transposes from one key to another, so Monet would transpose nature color into the "key" of painting. Limited as was his view, Monet thus opened the way to an art of pure creation. Mondrian, however, had the intention of removing all nature from art. All "modern" art, he asserted, involved a literal "transformation" of nature to a "non-nature." To complete this effort one had to realize the "neutral" form, a form devoid of any qualities associated with the natural.[37] Transformation, then, means the structural replacement of nature altogether by the non-nature neutral form. In sharp contrast, Cezanne saw the entire structural process of nature as an experience to be "translated" into structural terms amenable to the unique structure of painting. In this way he worked out a truly encompassing solution by which the artist could become a pure creator. For him nature *remained* the way to the new. Continuing Monet, he all but completed the realization of art as pure creation.[38]

Mondrian understood, more than any of his contemporaries, that it was from both Monet and Cezanne that he must set out. This is said from the evidence of his art, for he seems to have been parsimonious about mentioning these artists in his writings. Yet, at the very moment he achieved the goal towards which his two predecessors strove, he attempted to abandon nature, contrary to the effort of both Monet and Cezanne. He made a "complete break" not only with nature, but also with all past art. This he did on the basis that the transition to the new

consisted only of increasing negation of nature. He did not discern that the negation consisted of only one aspect of nature, not nature *per se*. With the disappearance of the object then, Mondrian wrongly concluded that nature had been completely exhausted for the further purposes of art. Thus was nature banished to be replaced by the "inner vision." Failure to continue with nature as the guide, Cezanne had emphatically warned, would reduce the artist to his "own pettiness."[39] It cost Mondrian even more. If he thought to create a non-nature neutral form for his art, he was never able to maintain neutrality before nature. He fell into a "hatred of nature."[40]

Neoplasticism deals with the perfection of an absolute reality. This rules out time, evolution, all qualities of change. The pursuit of reality was no longer what is was for previous arists who evolved their art before a constantly changing view of nature's reality. Yet Mondrian insisted that all past art unknowingly sought his universal reality. But because it imitates nature it is like nature, in that it veils the true reality which is hidden in the art. In any case, whatever validity past art may possess consists in the degree that it corresponds to the goal laid down by Neoplasticism. This is to nullify the constant change of past art before a changing awareness of nature as sensory reality.[41] All that past artists claimed to attain is rendered negative. What no past artist claimed to seek, only that is accredited to the past. Mondrian does not reveal how he distinguishes the universal reality from the veil in past art. He does have a little more to say, in this regard, as concerns post-mimetic art.

With Impressionism Mondrian now uses such terms as "development," "process," and like terms denoting change. He even speaks of an "evolution," but of an extraordinary kind. For its character is that of the increasing "negation" of nature.[42] It is the Neoplastic artist who completes this negation, replacing nature with a reality which is both non-sensory and absolute. Evolution is here understood, oddly enough, as the pursuit of what is already known to be some "fixed," "unchanging" reality. Time, as regards the whole history of art, is of no account; it is only negative. Time is like the optical vision, it is "subjective" and so is but another aspect of the veil that "limits" realization of the "true reality."[43] All "movement" and "time," Mondrian insists, must be "fixed" in art.[44] Yet the striving for the absolute reality is regarded as a "process" which Mondrian calls "intensification."[45] Here change or process paradoxically seeks attainment of the "fixed" or unchangeable. It would seem that this artist claims knowledge of an unchangeable reality, yet he fails to explain why he does not manifest it directly and be done with it. To the very contrary, we find him pursuing his notion of reality as all artists have, by means of the changeable.

Diametrically opposed to the act of "intensification," is what Mondrian calls "extension."[46] This refers to art which abstracts from sensory nature. Such abstractions, he says, can only lead to mere "repetitions" of nature. Precisely that which the Neoplastic artist would be reduced to once he fully attained his absolute reality—mere repetitions—is here attributed to all forms of art which have changed before an ever-changing vision of nature. All the past's differing visions of nature are reduced to mere useless repetitions. Change as it appears in past art is denied, while, at the same time, change in Neoplastic art is said to pursue its opposite, the unchangeable. The fact of the matter is, however, that Neoplasticism is like any other art, a constant process of change, in that no Neoplastic work has ever been said to have finally attained the absolute, "fixed" reality. But if such a reality is known in all its absolute attributes, as is claimed, the search for it continues as for a goal far from fully known.

Mondrian had continued the new path before nature and art, developed by Monet and Cezanne. With Neoplasticism he wished to sever himself both from nature and *all* past art. The past is now considered "infantile" and "oppressive." Neoplasticism being "adult" is, therefore, a stranger" to all past forms of art.[47] There is a "complete breakaway" of the new from all the past.[48] Throughout his writings Mondrian expresses hostility, often to the point of "hatred," against both nature and past art.[49] The consequences of this attitude are evidenced in what follows.

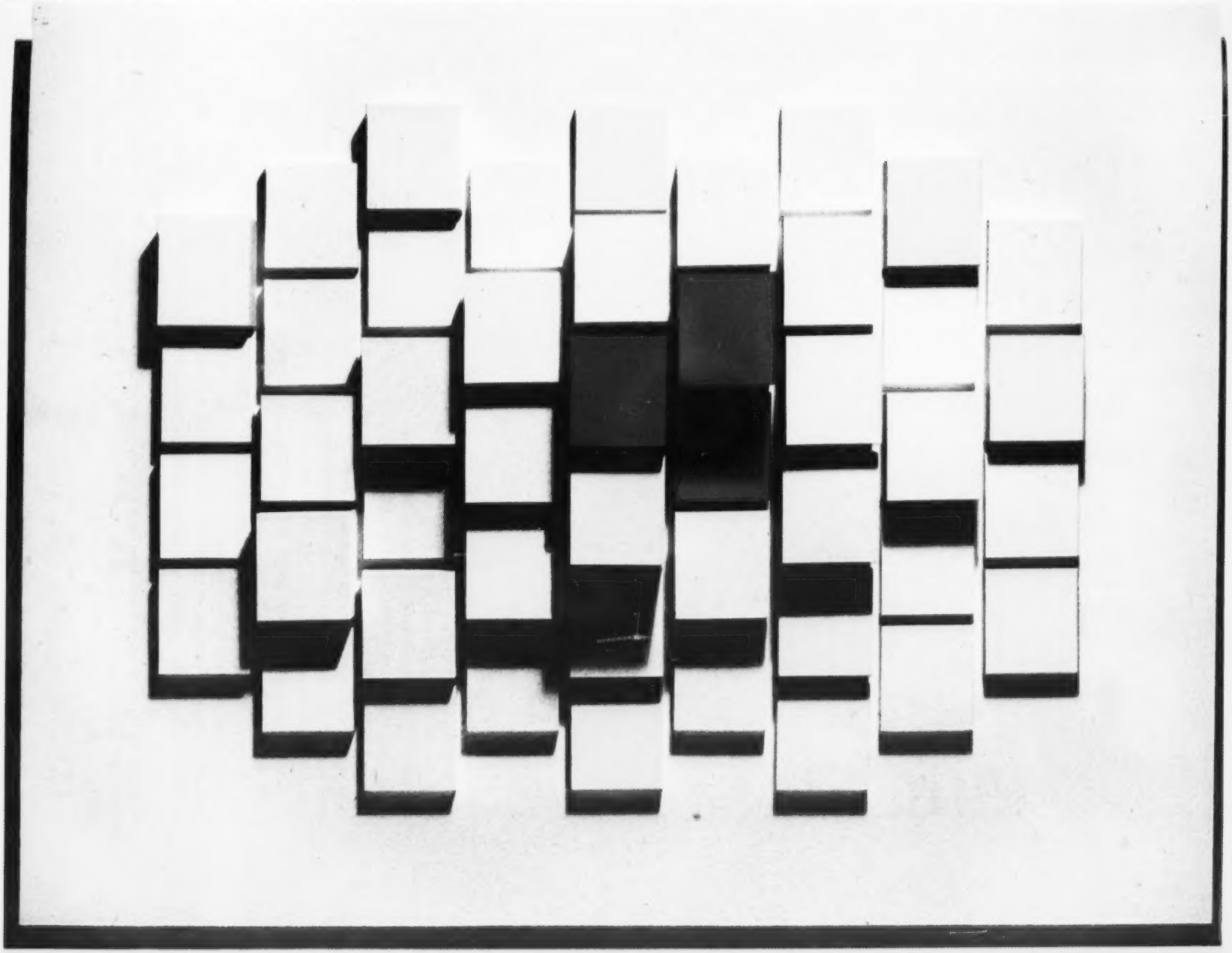
Man, Mondrian came to believe, is both a "creator" and "destroyer," one as much as the

other, even in art.[50] To continue the creative growth of past art, as previous innovators had done, this was no longer enough for Mondrian. He is obsessed with the act of "destruction," of all that is "natural." He would claim for Neoplasticism a role extraordinarily different from all past modes of innovation. It would not only be the beginning of the new, but also the *complete* rejection and destruction of the old. Mondrian the "destroyer" would r e p l a c e Cezanne who thought of himself as a "continuator" of the past. The past, Mondrian declared, is "oppressive" and "tyrannical" and so must be "annihilated."[51] A "fierce struggle" must now ensue between the old and the new.[52] All this obsession with destroying nature and the past only led him ever closer to the destruction of Neoplasticism, not to a super-reality.[53]

For the mystic philosopher Mondrian, logic itself establishes the authenticity of his "divine" reality.[54] Logic is reality. And art is logic made concrete.[55] Here logic is not a tool for analysis, as it is for the artist who abstracts from sensory nature. Its primary role is that of revelation, revealing a reality of "paradise." There is only a reality of "inner vision" with no appeal to outer vision, which latter is denied. When Mondrian turns to considerations of the sensory world, he does so as one who is free to reason "autonomously."[56] From the lofty pinnacle of this "divine" reality of "paradise," the empiricist's admittedly less perfect world of the senses takes on a hopeless appearance. He adopts the two views already noted. There is the sensory "veil" of nature, and the "abstract" reality of "nature." Thus he analyses a flat landscape with an uninterrupted horizon at dusk; the moon is visible.[57] He directs our attention to the horizontal formed by the earth. We *see* it. Turning to the sky, freely regarded as an upright plane, the moon is said to establish a "point." From this point, he says, the plane formed by the sky produces a "vertical line" to the already indicated horizon of the earth.[58] We *cannot see* a point, a plane, a vertical line. There is no need to question whether Mondrian experienced such right angle relations. What is questionable is his method of abstracting nature.

By transforming form relations into points, which Mondrian does in all his analyses of nature, points which then establish line and plane relations, nature was made to appear as seeking, but not attaining, those very structural relations attributed to the perfect but invisible super-reality. A deception becomes apparent here. The visible horizontal formed by the earth is mingled with the invisible, the point, line and plane. The deception is not removed by Mondrian's admission that the vertical is "not apparent."[59] It is necessary to the deception. For the effort is to exploit the validity of the sensory reality by compromising it with what lacks the validity of optical existence, an invisible reality. In this way Mondrian would claim that the "abstract" relations in sensory nature seek but fail to secure the "pure equilibrium" possessed by the invisible absolute reality.[60] It is the ancient reality theory of the ideal. He flatly states that he seeks an "ideal art."[61] If the ancient idealists claimed to achieve what nature sought but could not attain, Mondrian *also* claimed to secure what all past art unconsciously sought but failed to secure.[62]

It is worth considering the origin of the kind of thinking Mondrian used. Parmenides, of the generation preceding Socrates, originated that system of logic, the main arguments of which appear in the reasoning of most metaphysicians up to and including Hegel and his followers.[63] Among the latter belong Mondrian and members of De Stijl.[64] Neoplasticism, says van Doesburg, manifests the very laws, but plastically, that Hegel had elaborated.[65] Parmenides too, denounced the sensory as deceptive, a mere illusion,[66] just as Neoplasticians do. True reality, Parmenides asserted, was the opposite of sensory nature, it was "unchanging."[67] This was what Mondrian called the "timeless," "constant," "pure," "absolute," "universal" reality whose perfection was a "paradise."[68] It was Parmenides, however, who first formulated the basic assumptions by which to conjure such a reality. "Thou canst not," he said, "know what is not—that is impossible—nor utter it; for it is the same thing that can be thought and that can be."[69] Whatever we can think, must be real because we cannot think or say what is nothing. Parmenides is here attributing automatic reality to the medium of thought and language. We could not "utter it," he contends, if "what can be thought" and what "can be" were not the



ELI BORNSTEIN: *Structurist Relief No. 17, 1958.*

"same thing." Today we know, from bitter experience on a world scale, that "what can be thought" is not always the "same thing" as what "can be," or can possibly be. Certain of the mentally ill believe, with complete conviction, that they are historical figures. They too believe it impossible to "utter" "what is not." Parmenides reversed the functional order of language, thus permitting thought the prerogative of independently conjuring a super-sensory reality. It is in this light that one views Mondrian's references to the verities of "pure thought," and what he called the "art of the word."[70] It is through this imaginary door that "modern" art seeks its unrestrained freedom, too often assisted by those claiming to be experts in detecting the fallacious or delusional usage of words.

Since Neoplasticism is said to be a philosophy, certain distinctions between a philosopher and an artist bear looking into. The former, for instance, can claim to experience a perfect super-reality, compared to which the sensory one is both false and inferior. This reality presumably rests in the philosopher's head, seemingly beyond intrusion by others. All this is much more difficult for the artist. He must do what the philosopher never has to do. He must manifest the superior reality in concrete *visible* form. He must do more than talk. This problem of a super-reality produced by the image in contrast to the word maker, has arisen many times in the history of man. For example, after the Church displaced Rome, the iconoclasts denied to the image that reality they considered the sole province of the "word." The strength of each method, however, contained its greatest weakness. If the image is to simulate concrete manifestations for the "other world," it had to do so by wearing the optical apparel of the "here world." But this led to paradoxes between the two competing realities, necessitating constant compromise, which led to mounting confusion between them. If the "word," however, avoids the compromise with the sensory reality, it does so bereft of the conviction that reality could bring to it. In the end the "image" survived the attack of the iconoclasts, and the "word" sought conviction in the deliberate cultivation of the obscure.

The Neoplastician's difficulties were of another kind. His image could not wear the garb of the sensory world if it was to maintain complete structural "opposition" to nature. Yet Mondrian appealed to nature, but only verbally. He referred to the "hidden" reality of nature. Visible nature, he said, could not be comprehended except through "its contrary."[71] This contrary was wholly inaccessible to vision, and on this basis he claimed he was "not opposed" in his art, to nature.[72] He was more candid in early writings flatly declaring art was "non-nature."[73] In any case, if the visible supplied a false method for discerning the true reality, as Mondrian insisted, one wonders if visibility does not remain a dubious means for manifesting the super-reality in art too. How does the invisible reality attain visibility in art? Mondrian does not tell us, but it can be answered. Neoplasticism's visible qualities are the result of a visible, not an invisible, reality; *none other than the denied "optical" qualities of nature.*

Each step of Neoplastic development was explained by its author as a step in some "destruction" of visible nature. Such a development was possible so long as there remained some qualities of nature to destroy, *to abstract from.* In short, the destructive attitude towards nature is as much a method of abstracting from sensory nature, as any other. Had Mondrian continued his course to its ultimate destination he would eventually have ceased to abstract from nature. Once having completed the destruction of nature's structure, the artist would be cut off from any further structural means for manifesting a visible art. *For there are no other structural means but those before us in nature.* Destroying nature results in destroying art. Only when art disappears, can one say that art ceases to abstract from nature. Mondrian's claim, therefore, of an invisible reality as the source of his art is false, for it obviously originated in the visible, sensory reality of nature. It could not be otherwise! How much futile art and futile discussion could have been avoided, if only this one indisputable fact had been generally recognized, namely that all art must abstract from nature for the reason that there is no other *visual order* that can be *conceived or appealed to.*

Brought up a Calvinist, Mondrian was im-

mersed in transcendentalist attitudes. At the age of 19 he was undecided whether to devote his life to religion or art.[74] After his death only three books were among his possessions, all theosophical works.[75] What is remarkable about this artist, however, was his embarking head on, so to speak, on the greatest innovation of his times when he was already 40 years old, and when no one else dared to do it. That is, to achieve the evolution from Cubism to Planism which Cezanne began and almost completed. While Mondrian alone accepted the challenge of the new as demanding an altered view of reality, all his well-known contemporaries saw Cubism as the means for reviving the old method of abstracting from nature.[76] Six years later, however, Mondrian came to an impasse before nature, and saw no other course but to deny nature altogether. Two years later, in 1920, he wrote an extensive essay summing up his concluding views of art as Neoplastic. Art now had its course in a transcendental reality. Art had become, he said, a "religion,"[77] thus resolving the problem of art and religion that had faced him when nineteen. As noted earlier, the mystic approach of Neoplastic theory opened the way to every arbitrary interpretation of reality and art. Mondrian could easily conclude, that all the different efforts towards a new art were, essentially, striving for the same "goal," whether figurative or not. Neoplasticism remains as the one extensive system that provides rationalizations for that apparent diversity called "modern" art.[78] This general significance of Neoplasticism has remained unnoticed, because it has not been understood that such was the effort which Mondrian made. In his view Neoplasticism was simply further along in the direction which all forms of "modern" art were travelling. It is a system that attempts to rationalize all art since Courbet as the mystical contemplation of art and reality.

In this respect, George Santayana once observed that the mystic's idealism is diametrically opposed to the supreme characteristic of reason; that the mystic, rather than perfect human life, would eliminate it.[79] He noted that mysticism is not a religion, but a religious disease.[80] It was his conclusion that we would be rid of this destructive attitude by permitting the mystic to develop without interference, because his pursuit would gradually consume him. For the mystic, Santayana explained, by progressively destroying his own *basis in the natural*, would end by immolating himself upon his own inflexible and relentless ideal.[81]

It is only in the East, however, that we find mystics who fully accept the demands of the "divine" reality. They reject the sensory world and feel no need for the support of logic or reason. Their whole appeal is, in the words of Bertrand Russell, to the "deliverance of their insight."[82] Mondrian, however, wished to possess the advantages of both the Western and Eastern mystics. It is perhaps this effort to hold to these contrary advantages, which explains Mondrian's intense hostility to nature, while claiming to live in a reality of paradise. Hence the necessity for his "irreverent" attitude towards nature which "irritated" him.[83] The very sight of nature's green objects, and finally of anything green, became "intolerable" to him.[84] There was, as one of his friends reported, a "fanaticism" in his "hatred" of nature.[85] Are these the tribulations of a Western man who could not fully live the Orientalism of his mystic beliefs? In his analysis of the mystic's beliefs, Russell concludes, that he "is not quite disinterested or candid," that what activates the mystic is "a certain hatred of the daily life to which it is applied."[86]

Neoplasticism exemplifies the irrationality of an autonomous reality reasoned logically. But if we can *say* anything, we cannot *do* anything. Neoplasticism is a tragic example. With it Mondrian set out to destroy the plane because it was too "natural." At the end of his life he returned to the plane to avert the empty canvas. Otherwise his art would have ended in the very points with which he began the destruction of nature. The next step would have been the empty canvas. *Neoplasticism proves that any attempt to create a reality opposed to the sensory one, achieves the structural destruction, not of nature, but of art.* Mondrian himself found that the evolution of art had ceased with Neoplasticism, that all that remained was to elaborate on what had already been done. After that, he said, an "abyss" awaited art. Yet when he approached this abyss in his own art, he chose to retreat by way of elaboration on what had been done. He took the plane, and once

more began its destruction anew. Thus he avoided "immolating" himself upon his inflexible ideal.

PART III

Arthur Eddington once described the scientific reality of nature, with his famous example of two tables. One is the familiar table. It is a palpable object visible to our eyes, solid to our touch. The other, the scientific table, is none of these things. It is invisible and mostly "empty space" with a sparse scattering of numerous electrical charges whose bulk is less than a billionth of the "table itself."[87] What had always been considered a single individual object, is now presented as vibrating electrical particles, none of which has the status of individuality. To achieve structural order out of all this immense particle activity, the scientists employ the statistical method, the efficiency of which gains in accuracy the greater the number of particles considered. As with insurance statistics, the scientist determines what structural events will occur from the mass of particles, but not what will occur with any one particle at a particular time.

Why does the scientist use the statistical method? This has been illustrated with the example of a glass jar partly filled with fog. The fog is observed to descend in the glass jar at a uniform rate that responds to the exactitude of mathematical measure. If now a powerful microscope is focused on one of the droplets of the fog, something very different is observed. The droplet sinks in an apparently erratic manner. It makes zig-zag-like jumps away from, but around a general center of descent. This is called the "Brownian movement." Apparently molecules are pummelling the droplet as it seeks to make its descent. Here there is not the evidence of order corresponding to such as is given by the descent of the entire fog mass. Therefore, a scientist like Erwin Schrodinger regards it as fortunate that our senses are "coarse" enough to observe the larger mass aspect of nature. Were the scientist confined, he explains, only to the observation of the discrete aspect of structure, he could not devise anything that could be called a "law of nature."[88]

The statistical method was first applied to art, not to atomic structure. It was used to determine the order which the microscopic structure of the human form would take in sculpture. The Egyptian artists were the first to use this principle consciously in arriving at their ideal renditions of the human form. Later the Greeks formulated this method with philosophical logic. Briefly, the sculptor must examine a large number of human forms, as the scientist today examines a large number of particles, from which he is able to ascertain the ideal structure towards which nature generally strives but never attains. Thus the sculptor wrests order out of the imperfections of nature, much as the physicist of today would wrest "order from disorder."[89]

The crystallographer, however, speaks openly of an "ideal" order. The latter exists in a model he constructs possessing the mathematically exact symmetry structure towards which nature's crystal structure is said "to tend." The *nature* crystal is regarded as a "distortion" of the ideal crystal model of mathematical exactitude. In art, then, we hear of nature's "imperfections," as we continue to hear even today, and in crystallography we are told of nature's "distortions," while physicists such as Schrodinger inform us of nature's "disorder." In both the idealisms of art and science man is dealing with a *kind* of structural perfection invariably absent in nature structures. While observing nature in the way of the pre-Socratic originators of modern science, some scientists theorize in the way of the later mystic-religious philosophers; in the way of Socrates and Plato who turned away from the scientific attitude of their predecessors, away from the sensory world. Aristotle compromised the opposed positions of science and philosophy. In any case, it was these philosophers who perfected the statistical theory which had originated in Egyptian art. Plato said of God, that "out of disorder he brought order."[90] Today a famous scientific theory claims to create "order out of disorder" in nature.

The moment the statistical method was adopted by science, it was automatically burdened with the implications of idealism and imperfection regarding nature's structure. "With respect to our mathematical scheme of forms in natural objects," writes the crystallographer, F. M. Jaeger, "we are indeed still very close to the idealism of Plato and Aristotle."[91] It is the "ideal" model of the crystallographer which is a

"distortion" of the nature crystal, not the other way around. Has man discovered a "lawless" aspect of nature, or has he imposed it?

Crystallography reveals in a special way the problems and ramifications of symmetry in nature.[92] The symmetry approaches of this science offers a fundamental method for ordering the structure of nature, revealing above all that nature never seeks mechanical or absolute symmetry. Observation of flowers, shells, butterflies, or the molecular aspect of nature, reveals symmetry and repetition everywhere. There are constant variations in the various aspects of such order, evident enough on the macroscopic level of nature. It is these variants in symmetry which reveal the living creation of nature as distinct from mechanically closed regularity. If a shell and its colorations were rendered with mechanical regularity, the difference between the symmetry life of nature and the frozen machine product would be all too evident.

Could this non-mechanical character of nature structure be related to the "margin of error" that appears in statistical measurement, which increases as the mass measured is decreased? Would this error disappear if it were possible for the physicist to measure statistically all the particles of the universe? Might this error increase after a certain large mass was reached, as it drastically increases after a certain small mass is reached? What is the nature of this error? Is it error? Has the physicist confused the rigid perfectionism of the machine with the creative order of living nature? Is he creating "ideal" models, like the crystallographer, inherent, not in nature, but in the mechanical structure of his instruments? Are not all theories inferring "imperfection" in nature, operating on those antiquated metaphysical views held by the sculptors of Egypt as formulated in Socratic Greece? Is it possible that what scientists call error, lawlessness, randomness, etc., is but a kind of variance that allows a *margin of growth* play in nature through which the living, creative process takes place in nature's structure? In contrast, the machine is closed, is limited by the prevailing variance of its structure. The machine is incapable of growth and development, as are the living qualities of nature, and would be nothing without the living organism of man to tend to it, and to foster its development.

This is not to denigrate the machine as the means for producing objects of profound visual experiences in art, or as the scientific means for the study of nature. The machine provides the only means by which the artist can truly be a pure creator of art, as is nature; just as it provides the only means by which the scientist can penetrate into the depth of nature's structure. When the machine is directed towards the scientific study of nature, or to create art, the distinction should never be lost between the primitive perfection of the machine and the creative perfection of nature. This distinction would exert a profound effect upon the use of the machine and theoretical attitudes, not to mention social problems. The artist and the scientist must avoid introverting the machine and themselves into the rigid perfectionism of the mechanical. There is then the necessity of orienting the very structure and the use of the machine towards the living qualities that exist everywhere within nature. This is to be aware of the living quality of human life itself. The variations from the mechanical are precisely those qualities which reveal the life of nature's perfection.[93]

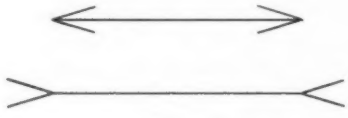
Returning to Eddington's two tables, the non-scientific one now invites attention. It represents the means by which art is formed. It is the nature reality of the artist as distinct from the scientist. But we have to stop here; science disputes the art reality of nature. Science, Eddington says, emphatically regards the reality of the familiar table, the world of "substance," as but a "self-deception."[94] All such experiences are regarded as nothing but the "greatest of our illusions."[95] Science banishes the visible world into a limbo of illusion to replace it with an invisible one. Only the scientific table is "really there," says Eddington.[96] What is visible is not there, what is there is not visible. Art would appear to be a fancy over a fancy, as Plato once contended. Eddington, however, found something wanting in this scientific reality. He was concerned with art, poetry, in short, with all that disappeared, once the visible world evaporated into sheer illusion. There are, he observed, certain aspects of human experience which "impell" us to seek out "beauty" in both nature and art, but which are not "warranted" by the scientific reality of nature.[97] He went on to say that

the materialist who believes that all phenomena are wholly contained in electrons and quanta, presumably regards his wife as an "elaborate differential equation."[98] What then would Eddington propose? Accept the "self-deception" as such, but regard it as a "mystical" experience which reflects an "underlying reality."[99] We seem to have returned to Mondrian's view! Oddly enough, Eddington was compelled to regard the sensory world as illusion, in spite of his jibe at materialists, precisely because he too could not accept any reality but the atomic one. To distinguish himself from the materialists he adopted a mystical view, just as Mondrian had done.

Did science actually discover that our senses received nothing but illusions? Did it not discover only that it was erroneous to expect the atomic aspect of nature to mimic the sensory one? Does not their error lie in expecting sensory experience to correspond to instrumental recordings of nature, but finding this not so, in condemning the senses for not maintaining their world over that of the particle one? Are they their own victims of the illusion they attribute to the senses? It appears that some scientists expect each deeper view of nature to repeat monotonously the structural laws of the previous level. This mechanistic expectation is contrary to nature's structure, which is creative, both in depth and direction. Is not this mechanistic attitude evident in conclusions made about the statistical method? That is, when nature was revealed anew once more, the atoms' apparently irrational behavior was denied individuality and scientists claimed to have discovered "disorder" in nature. Albert Einstein never accepted this view. He considered the statistical theory a "temporary expedient," since he found it difficult to believe, "that God plays dice with the world." His experience could not shake him of the belief that nature exemplifies the "harmony" of "order."[100]

In any case, human experience of nature was broken in two—there was illusion and reality. More dualisms followed. Nature became disorder and order, light became wave and particle. It is said that the notions both of the wave and particle, fit the facts with equal reason. It is also said, that each is "incompatible" with, "excludes," the other. Thus each fits the facts with equal unreason. Is it not a solution of verbal convenience to say that these views are "complementary"? Is nature a structure of dualisms? One is again reminded of Mondrian and his constant mystic preoccupation with securing "equilibrium" for "oppositions."[101] In science too, the individuality of entities disappears into "incompatibles" ("oppositions"), which are regarded as "complementaries" ("equivalences"). The individuality of the visible world dissolves into the invisible atoms which "lack individual determination."[102] Yet, what could be more individualistic than the descriptions the physicists give of the behavior of each single atom in relation to each other. Individuality reigns everywhere, in everything, in nature. But all this has been dissolved into dualisms. At one end of experience the sensory can only offer self-deception in illusion; at the other end instrumental perception can only give us disorder. The Greek ideal still colors the vision and minds of men.

Scientists surrealize the atom and artists surrealize the visible world. But does Mondrian demonstrate the "capriciousness" of sensory nature, any more than Schrodinger demonstrates the "disorder" of a particle? The artist only proved that try what he might he must abide by the determinations of sensory nature, while the scientist revealed his failure to frame a law for the new behavior which particles display. Some scientists speak of the "crisis of physics," as some artists speak of the "crisis in art."



To consider further the problem of illusion and reality, consider the two lines above. To our eyes both lines *appear* of different length. Using a ruler they *appear* alike. Such happenings can be experienced in nature, things appear to be what they are not. Are we to conclude from such experiences that sensory nature is not only an illusion but illusions within an illusion? For that matter, does not the scientific reality readily encourage illusion, so much so that mystics and religionists had a field day with the reality? Strangely enough, finding what they re-

gard as the only true reality to be a most elusive materiality, scientists then denounced the reality of the senses because it was nothing more than this self-same elusive reality. There seems to be more concern with denouncing sensory experience for *allegedly* failing to remain what previously it was thought to be. Anyway, is there indisputable evidence that nature creates both illusion and reality? Perhaps the atom is as much reality, or as much illusion, as the visible world. Has science conjured nature as illusion? Is nature any more concerned with creating illusions, than with creating moralisms, for human life? Maybe it takes a human being to conjure any illusions that may be experienced in nature. Meanwhile, nature has not become one iota less "solid" than it ever was, yet how readily so many agreed that it had dissolved into a mirage. For fifty years writers on art have decried the crumbling away of the sensory world of vision, under the impact of scientific discovery.

What effect has the new scientific reality had upon art? It has been considerable. All the more so because it was not understood that it was not a matter of choice. There was only the question of how, not whether, art would be affected by science. There are three important ways in which this has been effected. In one of these the artist is influenced by his mystic interpretations of science theory. Mondrian is the clear example, but there are many variations on this attitude. In more recent years artists have been influenced by the structures revealed by instrumental perception. They hold the view that the sensory vision of nature has been replaced by a "new landscape" of nature, that which the instruments of science evidence.[103] Is it that easy to solve all the problems that have plagued art all through this century? Judging from the art this solution achieves, it seems no more related to current problems of art, than it does to those in science.

There is a more general appeal to science, of which the Surrealists are the most obvious example. These artists claimed their "confidence" in visible nature had been badly shaken by science, that science thus justifies their pursuit of the "unknown" by means of the "obscure."[104] They were in fact pleased to exploit the scientific reality, to justify what they intended to do anyway. They then took Freud's theories and used them to rationalize their dismemberment of the visible world and art. In this way science has served as a convenient justification for most of what is called "modern" art. Thus has this art been rationalized as corresponding to an age of science, a belief assisted by some prominent scientists who are drawn to the confusion of "modern" art. Some time ago, Albert Einstein was taken on a tour of a famous museum of "modern" art. When it was over he frankly admitted that he could not comprehend what he had seen, or what had been given him as explanations of the art.

Ever since the latter part of the previous century, both artists and scientists have been encountering immense changes in their experience of nature as reality But the applications of science convinced even the ignorant that it reigned supreme in the affairs of mankind before nature. Art could offer nothing so obviously lucrative. Worse, art (like science) had lost the stable models of nature, the representations of which all thought they understood as art. Art was ignored except for a small public, now become world-wide, who chose to introvert art away from the sensory reality of nature. Even so, a few artists discovered a new aspect of nature by which to further the development of art. The general flight to introversion, however, falsified even these few realists for purposes of fantasy in art.

The supreme example of this falsification was inflicted upon the achievements of Cezanne. He was made into what he was not by countless artists who came after him.[105] This falsification had tragic consequences for both art and science. Had Cezanne been properly understood, the course of events between science and art could have been different. As it was, "modern" art acquiesced, rather than opposed, the scientific cancellation of art's reality in nature. Scientists were thus free to dispose reality to their own convenience. They over-simplified the *human problem of nature's reality*. The visible world did not fit in with the nature of particles, so away with it! It is only a "self-deception." It was a convenient solution for scientists, and seemed convenient to artists too. Thus artists failed to participate in the general assessment of nature as reality. Since then the majority pre-

tend that no problem of reality exists. Why not? Artists were free to do as they pleased. But this is the way almost all art became a mere source of "feelies," especially so since the 1950's, which would have delighted the inhabitants of Huxley's *Brave New World*. They would have felt that action-tachiste art was made particularly for them. As a matter of fact, it was!

In any case, scientists are constantly warning us that it is no longer possible to talk or think about nature, with the ordinary language applied to the ordinary world of the senses. Having made the point, scientists too often proceed to commit the very error they warn against, only in reverse. That is, the language of the scientific or atomic world is imposed upon that of ordinary experience. The scientist then pictures our ordinary world as so divested of the "solidity" we thought it to have that, if we were to act upon it, the effort would render us mentally deranged. We are left stranded in the fathomless space of the atomic world, hoping that some kind physicist will take us by an atomic hand and lead us to safety. Having warned us against identifying the visible with the invisible world, the scientist proceeds to identify the invisible with the visible one. At first there is a visible world unlike the atomic one; in the end it disappears and there is only the atomic, invisible one. All this is often verbalized with forms of expression that are both witty and mystifying. One has the impression that some scientists are disturbed by the visible world because it does not conform to their instrumental perceptions of nature, so it must be disposed of. The ensuing witticisms not only confuse our comprehension of the visible world, but also erect barriers to our understanding the scientific reality as well.

If artists think they have disposed of nature as a troublesome problem of reality, with the assistance of science, this has only served to further obscure the situation of nature and art. In the above illustration of the two lines it was noted that they appear of varying length to vision, but of similar length when a ruler *mechanizes our vision*. Here we have a telling, simple distinction between the artist and the scientist. The latter always searches with measuring instruments, whether in the spatial world of galaxies or the spatial one of atomics. He is primarily involved in what lies beyond the reach of human vision. Yet he must be constantly concerned with what *he thinks he sees* in his instruments. Scientists have become so mistrustful of the senses that some make paradoxical inquiries as to how nature would appear without the interceptive interpretations, or even the presence of, a human being. All this has had the effect of further discrediting sensory experience of nature in art. It has played into the hands of those artists who wished to escape the problems of art and nature.

If instrumental research had disclosed that our senses had become completely unreliable and useless, that would have been one thing. But all of us, including scientists, continue to use our senses as past humans have, it being obviously necessary and desirable to do so. *In the same way the art experience of nature's reality continues, as in the past, to be centered in optical vision, just as this vision remains the means for manifesting art.* Science and art view nature's reality from differing points of observation for their differing goals. Science, for example, deals with the *instrumentally perceived structure of light*, art with the *visual sensations of light structure*. For this reason science, not art, discovered the wave and particle structures of light. Art, not science, discovered the perspective structure of light. As Eddington put it, science is concerned with "paint," art with "painting."[106]

It is necessary to see that the two lines already referred to, appearing of differing lengths to vision, are important for our understanding of how vision works in art, *precisely because they appear of differing lengths*. Vision in art, or in visible nature for that matter, is attuned to discerning the way *things appear to vision*. The artist is not ignorant that these appearances do not correspond to other methods of experiencing them. It was consciousness of the differences between tactile and visual experience that permitted artists to discover the laws of perspective which determine the structure of the human image. Human sight is not a world of illusions, or illusions within an illusion. These variances but reveal the dynamic, creative life peculiar to the experience of nature and art. This world of vision has been constantly extended by the evolution of art. In our century

this extension has led to nothing less than discovery that the artist himself can create as does nature, but his are the pure creations of human life.

Various kinds of scientists have often used the illustration of the two lines, to teach others not to be "fooled" by what their eyes report. But whether one is fooled or not depends on just what one is using his eyes for. The ruler only proves that when vision is reduced to the extremely limited or mechanized conditions of a ruler, we are induced paradoxically to deny differences that persist in vision anyway! But for this peculiar structure of vision we would all have to carry a stack of instruments to get about. Eyes, especially the artist's, are not rulers or machines!

Instruments, more sensitive instruments, are an indispensable necessity for the scientist. The development of ever more sensitive perception of nature on the human scale is the indispensable necessity of art. Care must be taken in relating the artist's vision to instrumental data even, as we have seen, that of the simple common ruler! Science is largely concerned with the evolution of extra-neural perception. The task of art is to continue the evolution of the human scale of vision.

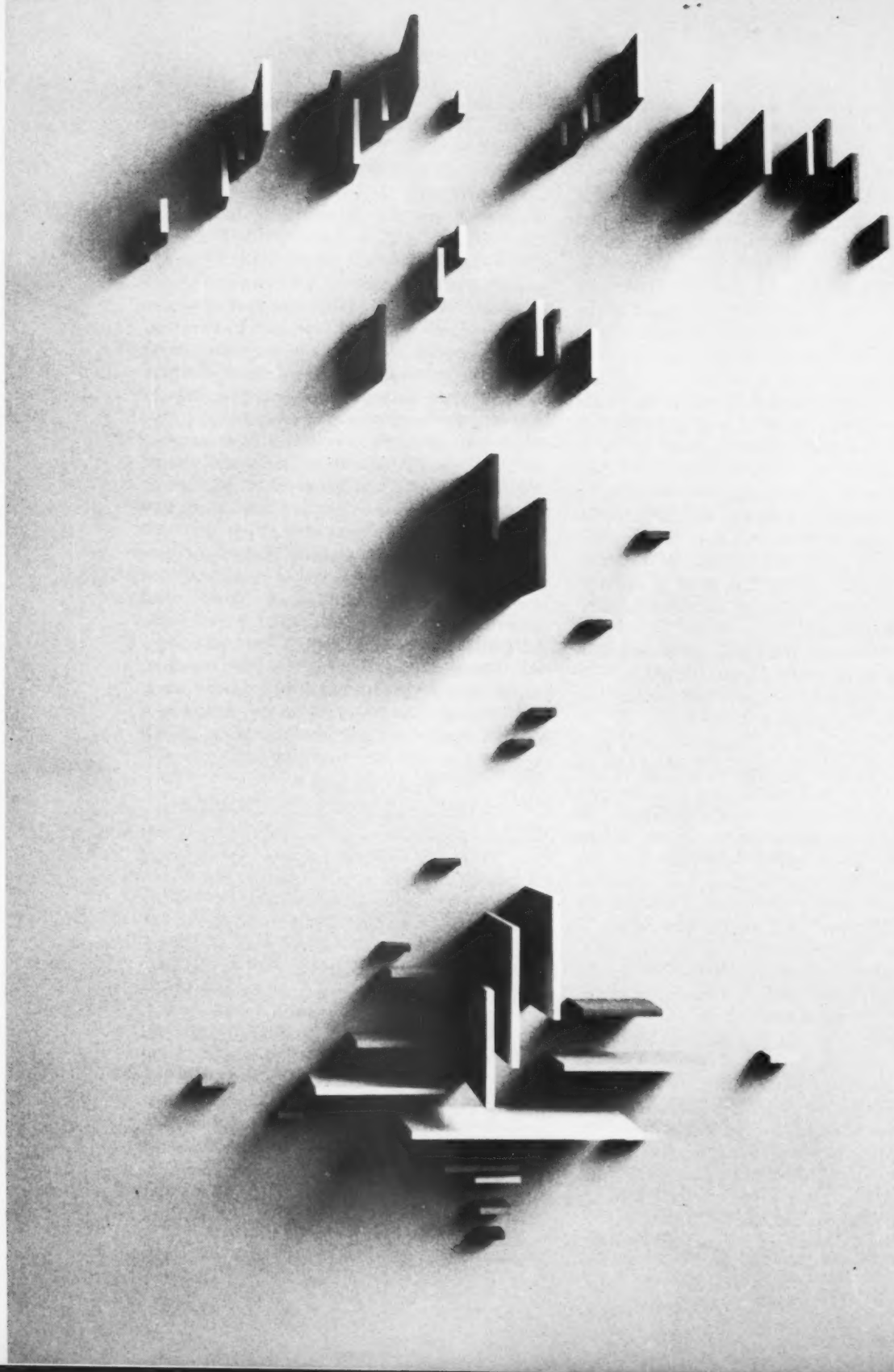
If the artist must now perceive more than mimeticism in nature, he must discover this for himself. Science will not do this for him, not only because the scientist does not wish to, but because he could not if he wished to. In any case, a new nature reality for art has been discovered, and has been in process of evolution since Claude Monet. With this artist the old vision ceased, and the process structuring of color takes precedence over the mimetic structuring of objects. By developing the Impressionist into the Cubist method, Cezanne extended the structural inquiry into the process of nature. Thus he discovered the fundamental nature of this process—creation. Through Cubism Cezanne gradually freed the plane from the object, to gradually evolve the creative plane of man. In this way he achieved the transition from Impressionism to Cubism to Planism. It was Mondrian who completed the last steps in the evolution of the plane to pure creation, in his spatial compositions of 1917.[107] Space was revealed as a new experience, one of pure creation. Like science, art was now searching into the creative process of nature, but with important differences.[108]

With Mondrian's 1917 works, two striking events take place. Art comes to a new structural correspondence with nature, and painting could not continue this development. Both old mediums were created for imitating the forms and colors of nature's objects. Now an entirely new medium was needed, one that not only permitted literal structural correspondence to nature's structure, but also most susceptible to the unique creative ability of man as artist. Painting could only result in conflict between nature and art, as Neoplasticism makes clear. To continue with the primitive and limited sculpture medium, was to frustrate the new with the old limited notions of form and space, whether in nature or art. The antique, now antiquated mediums, can offer nothing but "feelies." To continue with the old methods is to be confused or oblivious of the new nature reality, and the new creative demands of art. At odds with nature the "modern" artist readily believes that he creates out of the "chaos," "capriciousness," the "disorder" of nature, as some physicists think to do. What has been the result? Generation after generation, since Monet, artists have been buffeted from one crisis to another. Is this the freedom of which art boasts today?

Part IV

Certain scientists see nature as illusion and reality. Certain artists see nature in two aspects too. But one is the limited reality view of nature as objects, the other as a creative process, an immense extension of our experience of nature and art. And, in spite of certain physicists, the visible world is as real as it ever was. More than that, the artists who have followed in the path of Monet and Cezanne have, to the contrary of science, extended the reality of the visible world.

How to resolve the discrepancies between science and art? It is said that science seeks to break down categories, such as "things" and "forms," to replace them with a "common background" covering "all experience."[109] But this is presumptuous. Not all the sciences combined could ever cover all human experience. Perhaps it is necessary to reject a silent assumption about reality. From the cave man to the present, whether as magician, religionist, philosopher or



◀ CHARLES BIEDERMAN, *Structurist Relief, 1958.*

scientist, man has always assumed that reality is some one thing. Thus the visible world had to be displaced by the atomic one. Thus scientists shrank one end of experience, in order to extend it at the other end. Does not the change from the "concrete" to the atomic reveal nature as *creative reality transformations* from one level to another? Do not art and science disclose nature as a many-faceted reality each a part of nature's entirety, one grand creative process? Reality defracts into a plurality, the oneness of reality is replaced by the oneness of creation. Creation becomes fundamental to the comprehension of nature and man. Reality is but the means to the ultimate experience—creation.

Creation seen as fundamental is to experience reality in its multiple aspects, to see nature as a dynamic structural process. *From this view, the so-called illusions within an illusion on the visible level, noted earlier, appear as manifestations of the creative dynamics of this nature level.* From this view, the so-called "disorder" and "indeterminism" appear instead as manifestations of nature's creative *order*. One could then understand why a huge mass of particles responds to the static demands of mathematics, while at the same time, each *individual* particle performs a diversity of dynamic activities that do not respond to the mechanical or mathematical, because they are creative. One could then understand why such a limited number of basic elements in nature, possibly more limited than we suppose, are capable of manifesting such infinite creative diversity.

"Random," "disorder," "distortion," "imperfect," can one apply such adjectives to nature? Scientists do. "Crude," "monotonous," "imperfect," "repetitive," "capricious," can one apply these to nature? Artists do. Yet who can regard the discoveries of what goes on in nature beyond and before our senses—the repeated creative births of galaxies taking place in unimaginable space and time; who can look at all that nature and the artist put before our eyes; who can look at the amazing structural intricacies that transpire on the level of particles—and not feel an incredible sense of the variant order of creative life which permeates everything? Within this vast process of constant creation, man responds as he does, because he alone of all that exists in nature, is possessed of the necessity to achieve the supreme experience of nature, and of his own nature—life as a constant, conscious evolution of creation. If life is created, it remains above all, creative.

If nature does not seem to be concerned specifically with the desires of humans, nature does make these desires possible of fulfillment. It is necessary for humans to practise that sense which some have decried nature for lacking. For what aspect of nature can do this for man, except man?

RED WING
1956-1959

FOOTNOTES

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A NOTE ON THE TRANSITION FROM PAINTING TO RELIEF

Jean Gorin

Translated from the original French by R. S. Ridgway and M. S. Black, Department of French, University of Saskatchewan.

Jean Gorin, as a pioneer in the early transition from Mondrian painting to relief, was invited to contribute an article and photographs commenting particularly upon this transition. Gorin's low reliefs from the 1930's reproduced on these pages illustrate most clearly this development. The elements of both painting and relief—painted lines and planes as well as actual planes and lines in relief—to be seen in some of these works reveal the early conflicts in this transition and point to their later resolution.

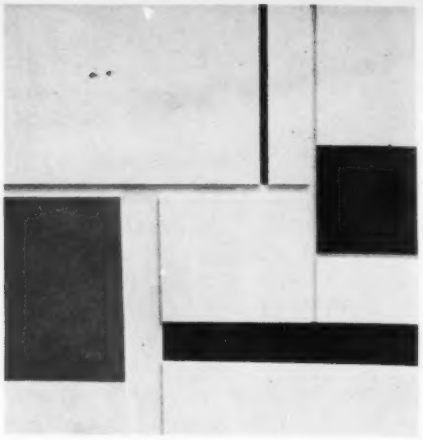
—Editor

It was about 1930 that I began to grapple with the principles of the concept of a truly spacial art, resulting directly from the five Neo-plastic laws defined by Mondrian, but not yet tried out. That is when I caught a glimpse of the possibilities of realizing a spacial architecture. The Neo-plastic painting was already composed with a view to expressing space, but it only had two dimensions. This space was therefore an illusion. That is when I began to construct my works with lines and planes in relief upon one ground plane. That was the first step on the way to the third dimension: depth. Very shortly thereafter I had the idea of constructing rectangular planes perpendicular to each other, standing out more and more from the ground plane, while unfolding itself in space, always on the orthoganal.

The essence, the ultimate aim of this constructive art reveals a new vision of the sensory world of art, which is related to the cultural evolution of modern man. This new means of expression in art reaches its fulfilment only when it manifests itself in and through the three dimensions of space. Internal space in a plastic relationship with external space reveals the new constructive unity.

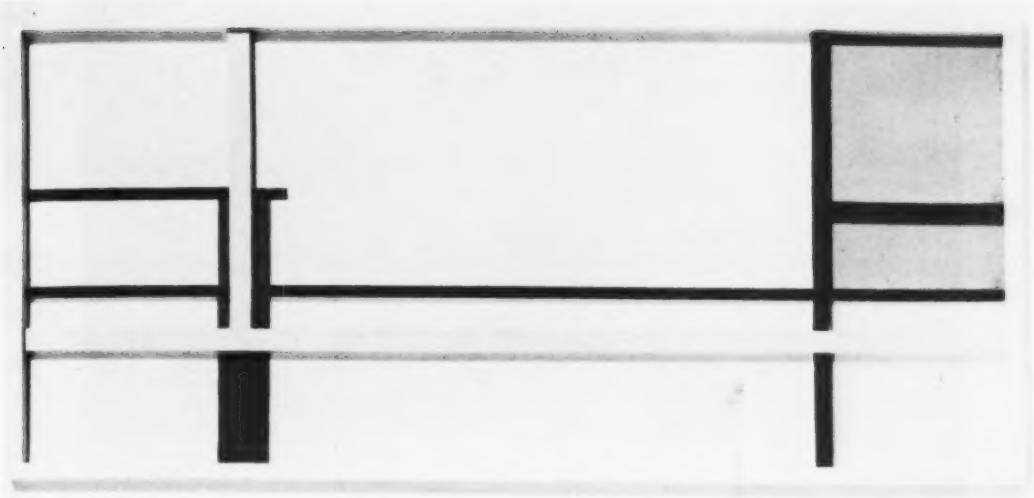
Today the constructive artist is indeed conscious that in the middle of the 20th century there is before us a great period in the evolution of humanity, a decisive stage. Man is becoming universal in outlook and is gradually making his way towards his true function as a creative constructor. Art today must be prepared to respond to all the spiritual demands of man living in the age of the conquest of the cosmos.

Le Perreux (Seine), France, 1960

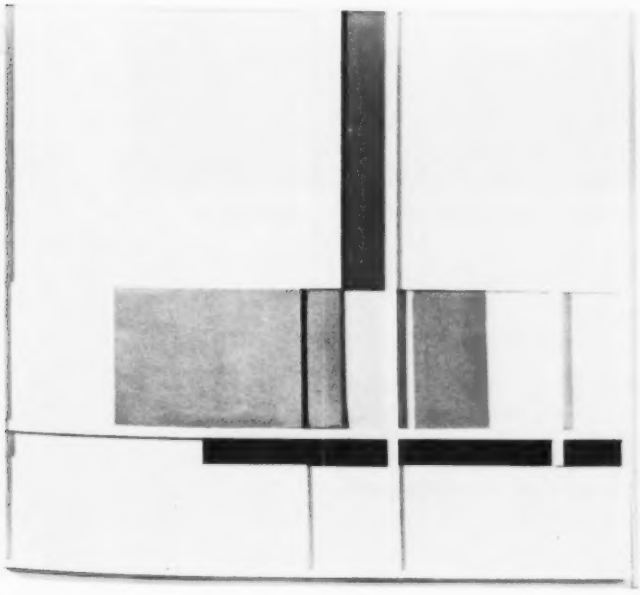


JEAN GORIN: *Relief*, 1930.

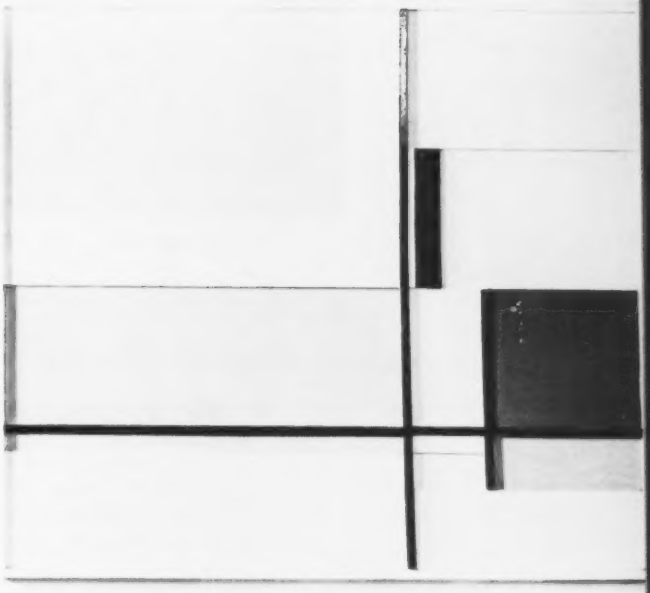
JEAN GORIN: *Relief*, 1930. Collection F. Graindorge.



JEAN GORIN: *Relief*, 1930.



JEAN GORIN: *Relief*, 1934. Collection F. Graindorge.



JEAN GORIN: *Relief*, 1936. Collection F. Graindorge.

Photograph from the Mount Wilson and Palomar Observatories: Spiral Galaxy in Triangulum.

"In the whole universe of events,
none is more wonderful than the birth of wonder," Cassius Keyser

"Science and art have arrived at different aspects of nature,
and both appear to have arrived at the frontier of nature,
its fundamentaly creative structure." Charles Biederman

"Nature, in the intimate and in the vast, is not designed.
It is designing. Our own nature confirms it." N. J. Berrill

"The Universe is something more than its parts." Fred Hoyle

"You cannot travel freely along a pre-determined path,
for where freedom lies, there is no path." N. J. Berrill

PRELUDE . . . . . *an interpretation*

Aspasia Voulis

night . . . . . Wonder kindles in the darkness
Streaming pristine knowledge
interlude . . . . Towards a myriad times and spaces
And through knowledge streams anew
dawn . . . . . A wonder in the silence of the sunlight

in the silent sunlight

There is a lucid plenum of light in space in time

Of swirling processes condensed at far slung times and points

Into the lights of suns

A plenum of light speeding unseen from points and times of suns

Into the limitlessness of space

And here and then, and now and there

The bursting-streaming light from suns reflects planet-islets

Into teeming, swarming, radiant life

In this far space of swirling times

A brilliant star amongst the myriad stars

Pursues its lone slow dancing through the deep of space and suns,

And round this star, a sparkling planet

Skims and loops and swirls in faster timing

Through the night of light-filled space

With scattered color-suns of stars for company

It is a clear and radiant planet

A myriad colors sparkle from its skies and seas

And lakes and woods and plains,

And on one cool and sun-filled day

A strong young man walks slowly towards a light-touched peak

A sea behind him, a plain of green before him

Flowing lights of violets and crimsons, oranges and yellows

He pauses in primordial wonder

Repoising in the sunlight of timeless silence

And turns to live in shimmering rhythms,

Pure-lights through emeralds and blues and turquoise,

Of sun and sky reborn through space

From sky and shore and ocean

He stands alone and free, this strange young man

Alive and radiant as the planet,

At one with sun and sky and sea and plain

The silent plenum's magnetic

Vibrant core of triumphant whole-rejoicing

Nature created and evolved, creating and evolving nature,

A culminating whole and whole beginning,

An artist, a creator,

A process in the evrevolving process of continuous creation

. . . . . .

Shall we range and venture in imagination

Through some very early processes of his formation?

. . . . . .

. . . . . night

Let us view him
Evolving through aeons and spaces
Of plenum transmutations,
From sparse-strewn processes
Of elemental hydrogen,
Diffused obscure

Beginnings of creation

Far-scattered, pressured,
Speeding near-approaching
Swirling from simplicities into less simple wholes
Spinning misty light-years of

A slow galactic plenum

Amidst serenely seething times of ceaseless plenae
Poised in timeless creativity,
And now and there throughout our island disc
Whorls of rapid differentiating processes condense to

Radiant, fluxing cores

And here and then, these pulsing stars,
Whirling and contracting and exploding
Into streaming times around their cores
Rebirth through swift condensing into

Molten, rock-strewn, deluged planets

And amongst the stars-and-primal-planets spawned
In countless times and spaces in our plenum,
We view

Within the measure of a myriad revolutions
Of our planet round our star,
Fierce flows
Of slow and restless
Scorching freezing swirling seething

Protean star-and planet-surface permutations

Quiver random gleamings,
Effervescent venturings,
Slowly tensing tremorings,
Strange magnetic potent pulsings,
Minute

Simple sensing surfaces

Selecting and absorbing and transforming primal ranges

Of sun-earth-interflowings into elemental living time

Amidst eternal processes, we see rare cores of living processes!
A more complex-simple integration
Of plenum energy potentials

We see a process whole,

A component process of our artist's evolution—

In continuous creation

Simplest elemental processes

Transmuting plenum energies

Swirling star-cores streaming

Coalescing planets kindling

Elemental living processes—

A culminating whole and whole beginning,

Simple origins of a more complex process

Within the timeless process of continuous creation

Now, amongst these simplest wholes
Of embryonic consciousness,
We view
Through misty eons
Of sun-and planet flowings,
Some primal dancing protoplasm,

—By mutant structure or environment
Responding somehow differently to light,
Perhaps with more duration
Than other life diffusing through the liquids of our planet,
Continue to divide and multiply and ramify
From ocean, ooze and shore
To firmer planet surface and more constant light,
And we view these

Simple-sun-earth-processes-alive-in-simply-varying-environs

Increasing and continuing
Dispersing and proliferating,
Becoming part of whole environment to other elemental processes
Of living light and air and earth and liquid,
Mutating and adapting,
Selected and surviving,
Differentially diverging into every
Life-sustaining premise of our planet

Becoming simple species

Adapting ramifying ranges of responding and transforming structu

To the slowly-swiftly ever-fluxing spectrums of their lives environs

Becoming each a process whole
In the ever-changing complex whole
Of interacting processes of sun-and-earth-and-species,
Transforming through the eons
The planet's seething primal surface
Into a radiating living network,
A vibrant, fluxing, pulsing web
Of myriad-formed preconscious life
In diversity beyond the reach of number

And amongst these countless ways of living
Ramified throughout the life-range of our planet,
We view
Through restless ages
Of our living planet's surface changes,
Species of simple scurriers
Becoming creatures climbing, clambering,
Essaying swaying through the trees
And surviving to mate and reproduce, to genetically continue
Only through the creatures who most rapidly develop
In adequately estimating spaces
Between themselves and near and less near static forms,
And not only accurately estimating,
But estimating and coordinating
The light-borne stimuli from tree-forms
With whole organism responses of survival motions—
We see a process of

Some species slowly flowing into vision centered species

Through gradually adapting whole-rhythmic-corresponding

To the color-form-space process of arboreal environs

And now we view
Some creatures agile and alert with vision
Formed by ages of arboreal living,
Adventurously increasing ground-time foragings for food,
Finding abundance and variety amongst the shrubs and grasses,
Returning to the safety of the trees
At night and rarer daytime intervals,
Gradually improving planet surface vision for discerning

Near and distant, slow and rapid moving dangers
And correlating this motion-information
With whole organism survival actions—
Again we see a process
Through ages of mutations, adaptations, and selection,
Of the gene continuation only of those foragers
Who realize survival harmony with their environs

We view
Some venturing creatures from this forage-living species
Experimenting slowly, not only foraging for fruits and roots and nuts
And seizing still and scarcely moving insects,
But also hunting small and slowly motioned animals –
We see them through the ages extending their inheritance
Of vision-brain-whole-organism coordinations
Towards a more complex ranging harmony
With nature's color-forms in light in space in time

Thus we see through ages of unconscious-dawning-consciousness,
Through arboreal, then foraging and early hunting
Processes of evolution,
The relentless outer-inner dynamism of varied and exacting

Either-or, survive-or-not environs

Impinging with these species supremely potent urge to live

Creating a new process of adapting,

An evolving corresponding of their vision with their worlds

And now we find emerging
Inheritors of countless eras
Of progressive vision adaptations,

A species dynamic
In diverse coordinations
Of their organisms with their environs,
Versatile in whole-rhythmic-correspondings with the
Multi-varied-ranges of their world's color-form-space process

A species who sustain inherent
In the very structure of their genes and brains
A tendency by far more potent than in other species of our planet

A Species with a limitless

POTENTIAL FOR EVOLVING!

Through progressively more complex whole-rhythmic-corresponding

In the LIMITLESS complexities of nature's sun-earth processes

And amongst this versal tendenced species,
In varied ways and times and places,
We discern a very singular yet seeming inauspicious venturing,
Strong and agile individuals
Drawing their hands over sand or clay
Or rhythmically arraying stones,
And suddenly suspending their habituated motions
To look and feel with most unprecedented newness,
Not only from accustomed and survival stimuli,
But to look-and-feel-from-
Sheerest-wonder radiating through their brains
Through a potent crucial moment magnetizing
A pre-primal wonder of their world's unknowns

We see ferments of new energies!
Germinals of wondering experience!
Unprecedented pre-stirrings
Of a whole new elemental process
On a planet of living processes
Amidst a universe of processes

Now for a time we perceive
Our early visual explorers
Simply drawing lines
And ranging stones and shells
And other simple nature objects

With sheer pleasure
Pure seeing
Wonder in the process

But slowly,
At varying times and places,
We again discern a very curious occurrence,
Some of their lines and simple stones
Briefly ferment their attention
As simple transforms,
Germinal analogues in their brains
Of animal forms of moment to their lives

And with generations of daily life survival
Extending their experience of
Animals and simple nature objects,
Increasing their adeptness in using,
And then simply imitating
Simple nature-forms for varied living functions,
Again, amongst this species
Uniquely gene and brain potentialed for evolving,
We find some vital individuals
Creating
A more complex realization,

Simply increasing resemblances perceived
Between animals and stones or cave-walls
With a chip or scrape or line or two

. . . . . interlude

And with these early form and image imitations,
With clear overt manifestations
Of a more complex correlation
Between nature and our vision tendenced species,

We find very slow
Experimental rivuletings
Of a whole new process
Begin to stream into the processes of nature,
Not merely as in proto-human evolution
A gradually evolving interaction
Between processes of nature and progressive species,
But unique in evolution, an inter-process process!

We now experience elemental records! visual descriptions!

Of a nature-species integration, a more complex-simple correlation,

A pre-primal amalgamation of evolving nature-human-vision-nature

We see anew a process whole,

A component process of our artist's evolution —

In continuous creation, plenum processes

Condensing star-and-planet interflowings

Structuring photogeotropic living time

Becoming vision-brain evolving processes

Creating

Elements of an elemental nature-species interprocess —

A culminating whole and whole beginning,

Simple potent origins of a more complex process

Within the endless process of continuous creation

And when, amongst our early human ancestors,
The beginning form and image
Indications of their world's perception
Become a method for transmitting information
Of vital import to their lives
Between themselves and younger generations,
When the developing survival of our species
Becomes extended from a simple function
Of gene and adaptive mutant gene transmission
To a more complex function equally dependent
On inter-generation brain communication
Of survival information,

We see the rivulets begin to gather in momentum,
We experience descriptions, form and image correlations
Between nature's limitlessly complex color-form-space process
And human vision comprehension

Evolving from a process
Of slow increase in correspondences
To actual forms
And then images
Of animal forms in nature

To a less extended phase of increasing nature-correspondence
In sculptural descriptions of the human form,
Then sculpture disappearing
From evolving records of nature in nature-human-nature integrati
And painting rapidly increasing correspondence
To the image of the human form in nature
While beginning structure correspondence
To painting's color-plane reality

We experience painting evolving through an even briefer process
Of describing images of nature's landscape,
Evolve from images of nature-human-nature correlation
When the human form yet dominates the landscape
To disappearance of the human form
From evolving artists' world perception

We experience very simple indications
Of sky and earth and ocean integrations
Very rapidly evolve to
Simple silent color-rhythm and color-process
Visual experiences of nature
Transposed
To simple color-rhythm-process painting

And we experience these new simple integrations
Between nature and human vision
Evolve within a generation
To a more extended nature-human-nature process,
We experience the color-plane of painting
Transformed through nature vision
To experience the rhythmic-color-forms

Then rhythmic-color-planes of nature
In full light in space in time,
We experience this
Process-whole of earth-with-sky-sun-vision,
A unity of earth-light vision
Translated
First to color-painting terms,

Then we experience the plane of painting simplified
Until painting disappears from evolving world descriptions,
A culminating whole

And we find emerging a strange new kind of process
Of a whole new kind of nature-human-nature integration,
And whole beginning

Thus through generation after generation
Of sculpture-painting processes, form then image phases
Of the animal and then the human form in nature
Becoming image records of the landscape
Streaming towards a whole new kind
Of nature-human-nature process,
Through generations of progressively less simple correlations
In nature-human-nature integrations,

We see a process record! a germinal process record

Of human vision comprehension increasing correspondence

Towards the limitless potentials in nature's color-form-space proces

From first descriptions of the animal
Ventured

By our species nature-tendenced towards evolving,
Through simple sculpture-painting explorations of the animal
And less simple sculpture-painting explorations of the human form
And still less simple images of nature's landscape
To the venturing
Of a whole new nature-human-nature process,

We see an evolving process record!

Of evolving nature-human-vision-nature integrations

Not a repetitive chain of mere changing adaptations
Of organisms or species to the ultimatums of their worlds,
But a process of progressive adaptations,
Evolving adaptations,
An evolving process-whole of evolving process-wholes,
Each successive process-whole
A more complex-simple integration of our species
With more complex, inclusive ranges of our visual environs
And we see, through the streaming generations
Of pre-dawn human evolution,
The unique creation,
Nature-human-nature creation of a method, art,
Symbolizing and transmitting
Degrees and kinds of integration
Between nature and our species,
Continuously renew,
Restructure our potentials for evolving
Through regenerating generative
Extended nature visual experience

We see this process quicken
Nature-human-nature evolving integration,
At first most slowly,
Then with an increase in acceleration
Unique in evolution
And

We discover nature's evolutionary process on our planet

Now

Simply streaming through creative evolution

Of creative-nature-human-vision-nature

A culminating whole and whole beginning,

A whole new process

In the ceaseless process of continuous creation

We discover vision-brain experience
From our whole past nature-human-nature process
Generating
Evolving process-record vision
Slowly generating

Simple primal wonder

Elemental nature-process vision

Creative sun and sky and earth experience

Creative process wonder

In the silence of the sunlight

And we live anew a process-whole,

A component process

Of creative nature-human-nature evolution, - - -

We are creatively evolved

From plenum-generated living star-stuff

Becoming ever more

Responsively

Magnetically

Creatively alive

To the limitlessly complex spectrums of our origins - - -

Creatively evolved and creatively evolving

A culminating whole and whole beginning,

A more complex-simple integration, an amalgamation,

A process in the limitless process of continuous creation

. . . . . dawn

There is a lucid plenum

Of prismatic-light created

Streaming

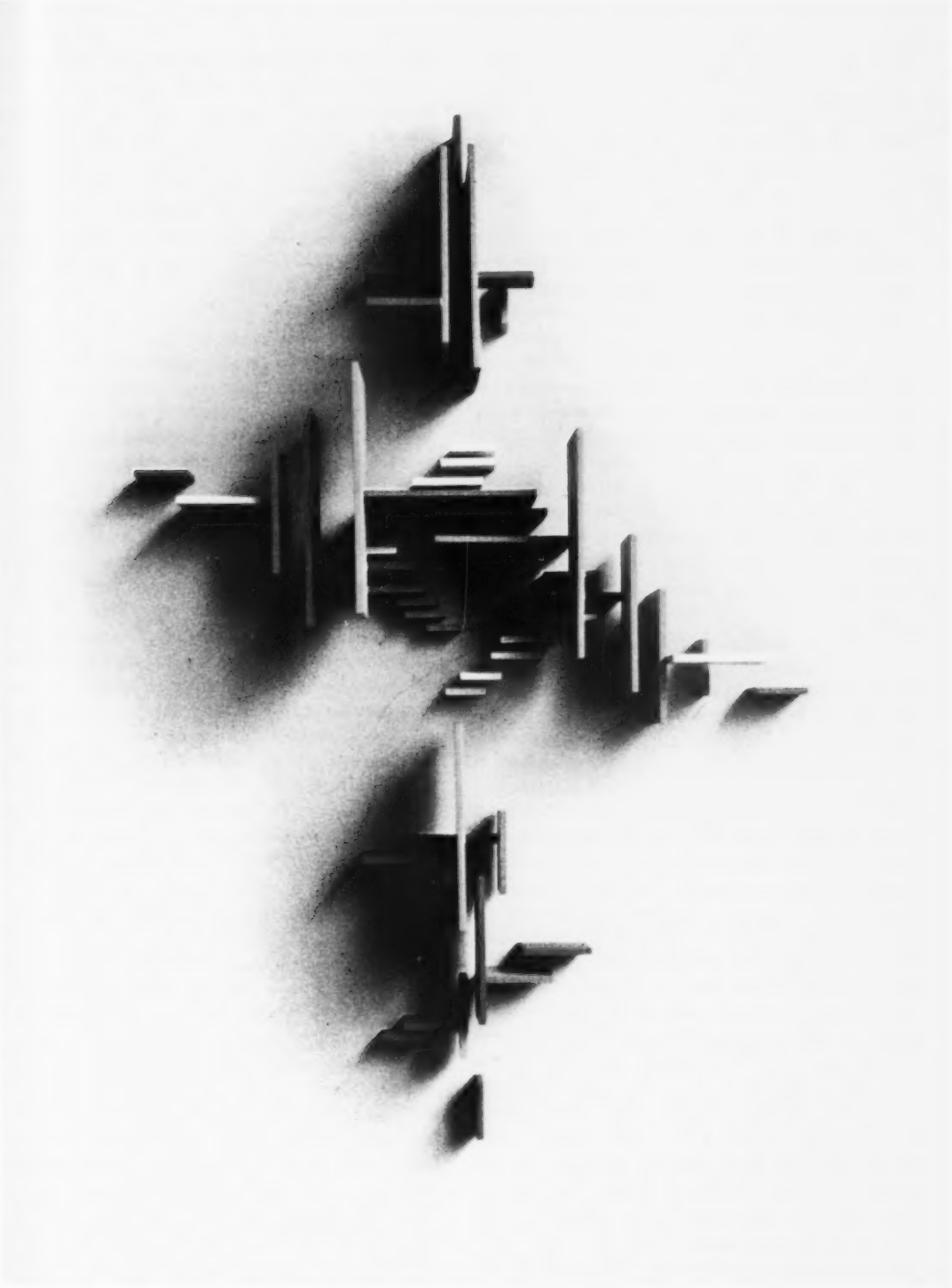
Simply radiantly creative

In the timeless silence

Of pure creating light in space

A plenum of light in space in time

A process in the evrevolving process of continuous creat



CHARLES BIEDERMAN: *Structurist Relief*, 1959.

42

INSTINCT-INTUITION AND EMOTION-INTELLECT IN ART

Charles Biederman

Western art has been characterized by periodic changes in emphasis upon emotion and then upon intellect, as though the two were in conflict. In the post-mimetic period this conflict has become totally confused. In this latter period only a minority have ever seriously regarded intellect as necessary to the solution of art. Instead a steadily growing number of artists have been increasing the degree to which the emotions act as the major determinant of art. This attitude now dominates everywhere. The highest form of behavior is thought to consist in the artist's capacity to be oblivious of what he will do. That is, he simply awaits the nudge of whatever emotions arise and proceeds to make a work of "art." It is this majority which will be given major attention here.

The tendency to extremes of emotion and intellect in post-Renaissance mimeticism is understandable.[1] Today we know, or can know, better. Since Courbet brought the artist's senses directly to the actualities of nature; since Monet opened the way to a non-mimetic nature and art; since Cezanne all but completed the realization and formulation of a new revision of nature and art, there has ceased to be any excuse for floundering in emotional (or intellectual) excesses. It is not that artists are ignorant of the past's errors with such excesses. Rather, they fear to profit from these past errors because they feel compelled to continue the old, established view of nature and art by manipulating both. Art is involved in the usual difficulty of every generation—too many are too conservative.

For our times, however, the price for evading the facts of art is heavier than ever before. Thus chaos rules everywhere. The various forms of extreme behavior promise disaster for the future. Yet it is a curious situation. If the majority of artists are stringently evading full confrontation of their intellect, at the same time they are aware that whatever they may do, intellect remains an inescapable part of all efforts at art, as in life generally. If the overly intellectual artist mistakenly assumes that order automatically implies the living quality of art, the overly emotional artist mistakes the chaotic result of fortuitous effort as achieving the living quality. Both extremes frustrate realization of the living quality, because each effort has a lop-sided origin in the whole structure which comprises the human organism. Consequently, one effort lacks the *coherence* of the living given by the intellect, the other the *pulsations* of the living given by the emotions.

To consider these problems it is essential to note some new factors which form the present climate of art. In them we can discover the new events that impinge upon and motivate the decisions of all artists, whether all know it or not. If the mimetic past was the result of an evolution, as shown elsewhere,[2] does evolution remain in force today? Most artists seem to indicate a freedom from such demands.[3] Nowadays they assume to be free to do as they please. Assuming this freedom for their own times, it follows that they apply these same liberties towards the past and future. Hostile to the past, to the demands of historical process, artists demand an attitude of "non-history," which only recognizes an autonomous present. Realizing that the inquiries of an evolutionary attitude pose a danger to their art, artists deny evolution. Problems are solved these days by denying their existence. There prevails a general hostility towards any attitude entailing a definitive, coherent position. Bereft of a coherent art, one must suppress such inquiry.

All experiences of past artists reveal that what we see is determined by what we think. Ignorance of this situation results in our thinking and so our seeing becoming canalized. Art is in a state of constant change because the act of vision is in a state of constant extension. Accordingly, emotional-intellectual experiences of nature, and so of art, are being constantly modified. This forms the great difficulty for both user and maker of art; art like life generally is forever changing. When we fail to comprehend a new form of art, we experience a literal failure of vision. Seeing becomes difficult, confused, frustrated. Vision becomes incoherent.

What has been the consequence of the over- or underestimation of emotion or intellect, as

regards the crucial problem of nature as reality? The emotionalists have been unable to free themselves from the old nature reality. Bound to this reality, now useless for their art, they were literally compelled to conjure fantasy renditions of it, either obviously as with the Cubist generation, or obscurely as with the later action-tachistes. That is, they wish to achieve a "new" art by manipulating the old reality, *by manipulating mimeticism*. Thus one would avoid the risks and difficulties of forming a truly new art. The majority today, the scribblers and drippers in paint and metal, would presume to achieve the new, by a partial or total "destruction" of the old mimetic abstractions from nature. *This evidences the prevailing regression into which artists have fallen in their abstractions from nature. This manipulation of the old method of abstracting replaces a constructive with a destructive mimeticism of nature.* This effort is openly or implicitly shared by those who over-evaluate the role of the intellect. If many of these latter artists reject the old nature reality, they are unable to discern any further reality values in nature. They are then compelled to resort to realities superior to nature's, a return to the ancient "spiritualisms" conjured by the intellect. The emotionalists also join in this effort, only they replace the "beauty" of the old idealism with a compulsive pursuit towards the "demoniac." *Together these excesses of the emotion or intellect manifest the final deterioration of Aristotelian transcendentalism in art.*

Aside from regressive periods, art is realized according to a natural order of development.[4] This is the consequence of our organism functioning with a *particular* structure within the *particular* environmental structure of nature. The artist's task is to discern the present potentialities that exist in the relations between these two structures. To the degree he succeeds the artist is free to engage the present evolution of art.[5] If, as has been done throughout this century, artists can ignore the present demands of evolution, be as arbitrary as they are able, this will only assure the continued chaos of art. Art can be *usefully sustained* only within the natural order of man and nature. *There is no other order to appeal to.* To disregard that order plunges art into a state of perpetual conflict *with that order.*

True, art does not and cannot achieve an unbroken pursuit of any kind of an evolutionary order. But this is not to disprove the existence of such an order. Art is not achieved by an organism that functions in some absolute, mechanical manner. Yet many seem to expect such achievement if the credibility of evolution in art is to be established. It is these same voices, however, who would be the first to cry out against what their criticism of evolution implicitly demands, namely, an uninterrupted mechanical development. The artist would then be but a robot responding to the demands of mechanical laws. In short, our critics are not fully aware of the structures out of which the living qualities of human life and nature arise. Human fulfillment of life would be impossible if actions could be controlled with the rigid perfectionism of a machine. There would indeed be only robots unconscious of the human experience of discovery and creation.

Through evolution the human nervous system has been developing. If the structure of the organism has not undergone fundamental change, the use of that structure has. Evolution increases the potentialities inherent in the structure of the nervous system. It is this aspect of evolution that is of interest to the present inquiry. The position to be taken is that the natural order of experiencing nature and art originates instinctually, from which arise intuitions leading to the knowledge of the intellect. By instinct is meant an innate experience, a natural propensity or impulse, an experience in sensation, of necessity arising without prior reflection. Thus is formed the direct biological link between the nature in us and around us. Intuition concerns apprehension, a seizure of ideas or notions. Insights are experienced without seeming to be prefaced by conscious calculation. Finally, the intellect forms the reasoning by which we arrive at conscious, definitive modes of evaluation for understanding what motivates our actions. Altogether then, there is the order of innate need leading to the apprehension of that need, resulting in calculations that form our understanding of that need.

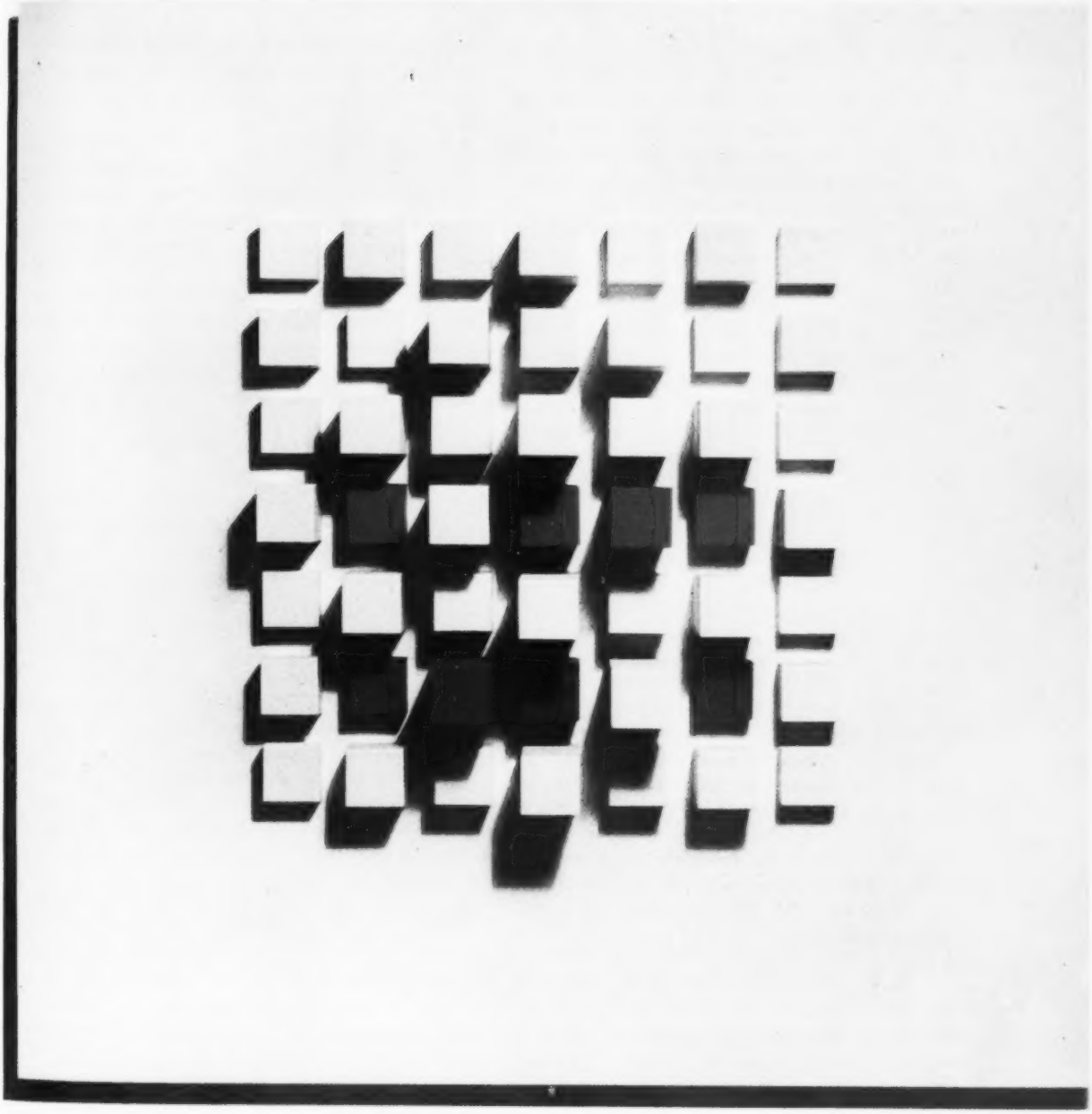
What arouses the genuine desire to be an artist? Is it that one just wants to create? Not at all. The initial impetus originates as a primeval necessity; that is, instinctually, as it did

for the very first artists of mankind. Every child manifests the necessity to express himself towards the world in which he finds himself, *in all of the various forms of art.* Thus every child experiences the *need* to express nature through the art of vision. This instinctual force is as organic as can be. Few, however, are able to sustain it, to make it grow and develop to its full power of expression. Few professional artists ever do so, which explains why art is so often turned to purposes other than those primary to the needs of art. In the very beginning of art, in the beginning of every individual's art, in every useful change that has occurred in art history, all had their origin in instinctual necessity.

The above would not find agreement everywhere. A striking divergence is supplied by Piet Mondrian. He rejects the instinctual faculty outright. This is due to his rejection of sensory nature. The instinctual, for him, is too close to the "natural," to nature. He insists that art must originate in the particular view he held of the intuitional faculty. He finds the instinctual representative of "animal nature," the intuitional a human act. Therefore, the instinctual leads to the "degenerate," the intuitional to human progress. The former, he warns, would "destroy" the latter.[6] It is clear, however, that if intuition becomes the basis of art, an unbridgeable gap lies between nature and what humans do in it. An aspect of the biological link is being denied by Mondrian's view of intuition. It then becomes clear just what intuition means to him. With it he was attempting to replace the biological instinctual link with a reality which would be purely mental.

It is true that Mondrian claimed that his intuitions were based on "nature." But in this he created confusion, because he also insisted on "opposition" to the "natural" or "optical" vision of nature.[7] In earlier writings he more candidly denied, without any qualifications, that art followed nature.[8] Only later did he distinguish between sensory and non-sensory nature, insisting that the former be abandoned for the latter. The instinctual could only evoke the "animal" or "brutal" response[9] to the chaotic, the "capricious," the contemptible aspect of nature. Intuitive discernment alone gave the true "nature" reality. Mondrian thus made the extraordinary demand that the artist ignore sensory experience, for a presumable nature produced by the intellect operating with the arbitrary liberty of "autonomy."[10] The instinctual, too close to the sensory, was to be abandoned: the intuitional, closer to the intellect, was all that was needed. It followed then, that Mondrian found art a form of logic. He asked if art was not logic made concrete?[11] But this question implies another that is related to his view of nature, namely: Is nature a logic made concrete? For such is the kind of "nature" reality he strove to devise. By rendering concrete nature into a logic he then used this logic to deny its optical aspect as an inferior reality. This logic was then rendered back into a concrete form, this time revealing an art whose visual qualities were in direct "opposition" to those of concrete nature and superior to it as a reality. If Mondrian managed to render nature into mere words, his art was based on no more than these same mere words.

When Mondrian correctly discovered that nature's objects could no longer serve the future needs of art, he mistakenly took this to mean that nature must be rejected *in toto.* He was assuming that nature could not yield a new reality such as might correspond to the needs of the new art. He was then left with no other course than to construe a reality out of bare words. He filled these words with the logic of mysticism. Having delved in such rationalizations even before the reality crisis of nature arose only served to encourage his rejection of the senses for the mystic verbalisms of the intellect. His severe religious upbringing which entailed a revulsion towards the sinful animalistic nature of man and anything natural also played its part in this artist's subsequent rejection and then literal "hatred" of nature. He became enmeshed between the senses he could never escape, and the verbal reality with which he could never escape. The insoluble character of this conflict is confirmed by the history of his theorizing about it. At first he frankly claimed, without qualification, that art is "non-nature."[12] But he was compelled to modify this position. Thus later he presumed knowledge of two opposing aspects of nature. His attempt to construe a reality wholly outside nature had to be replaced with some kind of "nature." His words were forced to remain and do battle with



ELI BORNSTEIN: *Structurist Relief No. 23*, 1960.

sensory nature. It was this conflict that left him with a "hatred" of nature.

From the two views so far introduced, the writer's and Mondrian's, we now turn to a third view of these problems. This one is supplied by Georges Braque. If Mondrian centred everything in logic, Braque could not denounce logic enough. Logic, says the latter, leads to the "death" of art. To appeal to logic only reveals the "deficiencies of our instinctual faculties."[13] Reason, he believes, leads to the rational, while "creation" is an "irrational act."[14] Braque and Mondrian arrive at opposite poles: the intuitionist achieves reality determination with a logic that rejects the demands of sensory nature; the instinctualist with an irrationality that rejects the demands of logic. The former wishes logic to determine the *vision of art and reality;* the latter desires irrationality to determine the *vision of nature for art.* Both views are in conflict with sensory nature. What we think determines what we will see.

Both Braque and the Neoplastic Mondrian desired unobtainable liberties. Their respective histories are explanatory. Both began by rejecting the old mimetic nature attitude. Both then experienced a crisis when the object was about to disappear. Mondrian solved this by rejecting nature entirely. Braque was unable to do this. If Mondrian rejected nature because he could not see nature beyond objects, Braque felt he would be left without nature because he too could not discern a nature beyond objects. In this sense it is understandable that Braque could only see a void if nature disappeared from art. Such a possibility, he tells us, made him feel "boxed in," from which "there is no escape possible."[15] Refusing such prospects, Braque renounced Cubism as "prejudices,"[16] which could only bring disaster to art. He then retraced his steps as Cubist, returning to the *destructive manipulation of mimetic abstractions from nature.*

In spite of his effort, Braque was "boxed in," if differently than he had anticipated. Having rejected the literal imitation as well as the literal elimination of nature's objects, only one other alternative was left open to him. As Mondrian's attitude left him only verbal means for the determination of reality, so Braque's attitude left him only primitive means for making such a determination. Unable to completely leave or completely return to the method of mimeticism, his only alternative was to primitivize the mimetic image of nature. The paradoxical character of this position is revealed in the peculiar way in which he states it. "We should not imitate," he says, "what we want to create."[17] But how can there be any danger of imitating if one is indeed creating? This could only happen if one is depicting the forms which nature has created. In which case imitation is as certain as creation is not. This was precisely the situation of Braque and explains the odd way in which he states the problem. Obviously one cannot create what nature has already created. At best Braque can be said to have "created" a particular form of nature mimeticism.

Finding himself in this paradoxical "boxed in" position, it followed that Braque would discover "creation" as an "irrational act." Again he had no alternative but to adopt the primitive pre-logical attitude, for creation has indeed become irrational. Now he would destroy all "reasonable truths," to "deliver man from his logic."[18] Being "too logical," he says, would destroy the "magical powers" that are the sustenance of irrationality in art.[19] The artist becomes a "sorcerer," Braque claims, who creates "signs" that express the significance of man in the universe.[20] But appeals to primitive reason, to magic, could only result in a pathological interpretation of man's significance in the universe. Braque had what he calls "creative hallucinations."[21]

By putting the instinctual faculty in hostile opposition to logic, Braque limited this faculty to a regressive effort. Instinctual emotions held in the grip of the irrational, engendered pathological destructions upon the structure of vision and thought. Rejecting the one *useful* comprehension of nature available, nature as a creative process, Braque was left with the now useless mimetic vision of nature which could only be experienced pathologically. In either case, Braque was alienated from the actualities of nature. Everything was twisted about, and only irrationality can rationalize that. Emotions are no longer consummated with, but dictate to, the intellect. The ambiguous, the arbitrary of unfettered emotions circumvent the integrity, discipline and order of the intellect. The ob-

scurity of the irrational is imposed on the form which reason takes. The natural order by which emotion-intellect creates useful experience is reversed. The "beautiful" becomes "demoniac," "logic" becomes "magic," "history" becomes "non-history," etc. The past and future, as such, must be ignored if not denied. For instance, Braque thinks the artist need merely state, "I am here."[22] Such an artist must pretend he has no past, just as he pretends indifference to knowing what he will do as he is about to make a work. Even when the work is done, he must know no more about it than a fortune teller reading tea leaves, according to Braque. [23]

The foregoing reveals that Mondrian and Braque concentrated their criticisms upon the unstated implications in the position the other took. This each ignored by concentrating on the failing each discerned in the other. Thus, Mondrian's position only served to confirm Braque in his abhorrence of logic. Braque found that such artists "separate the mind and the world," and their "abstract" art denies nature with its "anti-instinctive" attitude. Such artists, he found, "expressed a hatred of nature."[24] All this fits Mondrian; it is a true critism. But Mondrian did not choose to reply. Instead he pointed out that those who relied on the instinctual were headed in the direction of "degeneration," in the way of the "animal" and "brute;" that this produced an art of "primitive expression," destructive to the achievement of human culture.[25] This is a true criticism which fits Braque and so many others. Braque, in his turn, chose not to answer the charges of Mondrian. He returned to his magic; the other to his mysticism.

Each might have learned from the other that each was denying some inescapable aspect of the human being and the world of being. Their respective negations of certain functional aspects of the human organism eliminated nothing. They only frustrated the natural operation of the organism, rendering its structural function pathological. Yet Braque for all his hostility to it, uses logic whenever it seems convenient. This, according to his own theories, reveals a "deficiency" in his own use of the instinctual faculty. While Mondrian, for all his condemnation of primitiveness in our culture, sought instinctual release in the primitive-like beat of jazz and boogie-woogie. Suppression merely determines the manner in which the suppressed will thereafter manifest itself.

Mondrian claimed that Braque's position would "destroy" art; Braque that Mondrian's attitude would lead to the "death" of art. One agrees with both. The reason for choosing these two artists for discussion is apparent. They clearly exemplify in their works and words, the prevailing confusion before the vision of nature, and so of art. This is not the first time that art has become a confused problem before nature. In the past, however, artists could always find the ground under their feet again by returning *directly* to the observation of the stable art models of nature, its objects. Such an appeal to nature is no longer effective. Since Courbet artist after artist has made every conceivable attempt to *return* to the old image of nature and art. As each attempt to go beyond the mimetic image failed, the artist would again strive to resurrect the old image in some form. Return to the past is impossible, only regression takes place.

Art stands confused before nature because it is not understood that, for the first time, there is a change from one reality level of nature to quite another. The old vision will only sustain the chaos that prevails; nature now requires a deeper vision. "Nature is not on the surface." Cezanne observed long ago, "it is in the depth."[26] Confusion cannot be removed by compromising the old with the new vision. This only falsifies both visions, and ends in compromising the emotions with the intellect or vice versa. Art, torn in the conflict between the old and new vision, is in a state of seige between the emotions and intellect. "A disciplined temperament" is demanded, remarked Cezanne, "which knows how to organize its sensations."[27] This artist, in unpretentious words, stated the whole problem: "Yes, I want to know. To know so as to feel better, to feel so as to know better."[28]

How does feeling make one know better? How does knowing make one feel better? Indeed, how in the world does an artist come to feel and know what previously he did not feel or know? The point has been made that each change in art arises out of the instinctual experience, out of the psycho-biological link between

the artist and nature. In turn, however, each modification of art has altered the instinctual experience of art. The instinctual, no less than the intellect, has undergone development. Had this been understood, the error of identifying the instinctual only with the primitive, by both Braque and Mondrian might have been averted. It is easier to recognize the primitive instincts that survive in all of us, but difficult to discern the developed modifications inherent in the instinctual effort, the outcome of man's developing relations with nature. Ignorance on this score accounts for the erroneous efforts to recover ancient instinctual orientations, such as those possessed by primitive and past Oriental artists. These efforts have drowned western art in pathology.

The emotional life of art is constantly renewed in the instinctual experience. These emotions are a form of unconscious thinking, because all the past accumulated experience of nature and art forms the potentialities for present instinctual experience. Accumulated experience is both conscious and unconscious, and we live in both. We can never know the allness of the human past or present, nor the allness of nature, but we must constantly live in that allness according to its structural demands. It is the instinctual that enables the artist to contact both the unconscious aspects of man's experience, and the allness of nature. Thus the artist is able to contact new experiences, what will eventually become known. In turn, all that becomes new knowledge must return from where it came, to the unconscious life, to become submerged to the point where we are again aware of feelings that are confronting what is yet to be known. This submergence of knowledge into the unconscious is of crucial importance. Knowledge is freed from conscious control, from the unavoidable prejudices of the intellect. Our knowledge then stands defenseless before and receptive to the judgments of new experiences in nature. This renders the emotional life of the artist's vision acutely sensitive to the visual sensation of nature. He is made fit to experience nature without prejudice. Words are banished, there is only the naked sensation of nature. *He is able to "feel so as to know better."*

Were the intellect to usurp the role of the instinctual emotions, the living quality of art would be replaced by hollow words. Art then becomes inert, a lifeless formula, perhaps also frozen in the vise of mathematics. To the contrary the artist must put aside all he has consciously acquired, that he may *attain a state of perception akin to that which the very first artists experienced the first time before the example of nature.* The artist attains a state of *pure sensory objectivity*. Thus is the life of nature ever renewed into the being of human art.

Objectivity is not exclusively the province of the conscious intellect, a fallacy forced to extremes in these times of rigorous science. Feelings or emotions evoke a unique aspect of objectivity. Cezanne seems to be referring to some such view of the problem, when he says, "that the free mind of the artist must be like a *sensitive plate, merely a registering device,* at the moment when he is working. But this sensitive plate, which some *skilful developing baths* have brought to the *point of receptivity,* is then *able to be impregnated with the conscious image of things."* [29] (ital. c.b.) He tells us that before nature he forgets everything he knew. Hence the importance he gives to the "sensation," that he may attain the objectivity of a "registering device," be a "sensitive plate." In this way he sustains his biological link with the living reality of nature, that he may impart this quality into his art. He regards color as "biological," as "living."[30]

The emotional objectivity achieved out of the instinctual experience, this "unconscious thinking" of the emotions, prepares the way for the intuitive insight. Intuition is the link between instinct and intellect, partaking of a rapid interchange between them. Intuition relates to the two other faculties in much the way the present relates to past and future. It forms the line of communication between the instinctual biological force that dominates all organic life, and the quality most highly developed by human life—the capacity to make ever higher orders of abstraction from nature. The unconscious thinking of the instinctual emotions, crossing the bridge of intuition, becomes the conscious feelings of the intellect. The distinction is between consciousness of having feelings which develop into a definitive consciousness of what one is feeling about. The misty forms of the emotions arising from instinctual expe-

rience, take on a partial clarity of form with the apprehensions, insights, the seizure of ideas of intuitional experience, finally to take on conscious, definitive form with the experience of the intellect. Using the expressions of Cezanne, the instinctual recordings on the "sensitive plate," are submitted to the "developing baths" of the intuition bringing them to the "point of receptivity," that they may become "impregnated" with the intellect's "conscious image of things."

Cezanne sought knowledge by way of the instinctual "sensation," to impart the fullest living experience of nature to art, without hamstringing it with the intellect. He seemed to be saying this when he remarked: "I will be as cerebral as you wish, but also a brute." [31] To the Neoplastic Mondrian he would have pointed out, as he did to the idealists of his day: "Your absolute beauty is a chimera."[32] To Braque he would have pointed out, as to those who sought "a kind of barbarism" in his times, that was even worse than the art schools, that such "naivete" is a "senility," the "worst of decadence," which could only lead to the "death of art." Because, "we are no longer innocent. We are civilized men."[33]

Emotions understood as unconscious thinking, thinking as consciousness of emotions, circumvent categorizations which fragmentize and frustrate comprehension of the ramifications of experience. The order of experience appears as overlapping repetitive cycles. Each new consciousness of the intellect's emotions returns to be submerged in unconscious instinctual thinking. So the renewal and continued growth of experience. Unfortunately, there is nothing to prevent anyone from interfering with the natural process of experience, by favoring some aspect at the expense of others, as in the cases of Braque and Mondrian.

As regards the majority, the effort to manipulate the emotions as the final determinant of art has reached in recent years the fullest extreme ever in the entire history of art. Painters spilled, splashed, pecked, etc., with paint. Sculptors, in their own way, were likewise occupied. This infantile visual babble has completely obscured the central problem facing art today—nature and art as pure creation. Hence the destructions heaped upon both the old and the new, by compromising them in the search for the short cut. Schism rules everywhere, in the vision of nature and art, and between the emotions-intellect, etc. Chaos rules over order and harmony. Emotions lead a sort of half-life which dulls them, leaving them responsive only to shock. The pressure under which the intellect must exist in its degrading role, explains the arrogance and indifference to any demands for reason in art. Artists have become content with defeat and void.

Every artist must act emotionally and intellectually, in some way. Favoring one faculty at the expense of the other nullifies the quality of the relation between what the artist feels and thinks. No sharper distinction exists than the contrasts between Structurists and Expressionists using these terms in their historical sense, as the present writer has done elsewhere.[34] Expressionism has consistently been the majority effort since Courbet. Over-emotionalism is the prime determinant for making and rationalizing art. This emotionalism led all but one contemporary to make a false evaluation about Monet's Impressionist achievements. If this majority discerned that Monet had opened the way beyond Courbet's realism, they saw only one opening, not noticing another. Consequently they saw Monet's Impressionism as merely the means for giving a new "expression" to what had always been the concern of artists—the objects of nature. In their view, Courbet had only exhausted the literal mimetic image of nature, not that image *per se*. Impressionism thus continued further the path opened by Courbet. Monet, they thought, did not understand this primary role of Impressionism, what with his major concern with the landscape at the expense of the human form.[35]

One artist realized that Monet had opened up another and entirely new *historical* direction —Structurism. That was Paul Cezanne.[36] He understood Courbet as having concluded mimeticism, in whatever form. He did not see Monet as continuing Courbet with some new resurgence of mimeticism. He found something incomparably more interesting, namely, that Monet had opened the way to nature as structural creation, that with this new example the artist too could become a true creator. If Monet only understood nature's color in this way, it

was Cezanne who took this comprehension of creative nature to the full extent of structure. It was he who discovered that henceforth the structure of both nature and art were to be understood as "creation." He thus continued Impressionism further, because he insisted on achieving a "harmony" between emotion and intellect as the means for resolving the new problems.

In short, the great changes which Monet brought to the colors and forms of nature objects were viewed in two opposite ways. The Structurist Cezanne saw the necessity of working away from mimeticism of the object towards a purely creative objective, which would be achieved by a new and deeper vision of nature. The Expressionists, which term encompasses all other attempted innovations, did not wish to leave the mimetic appearances of objects. If they avoided literal mimeticism, mimeticism nevertheless remained their central objective. They were content to manipulate mimeticism. *The Expressionist wishes to continue the old vision by making it "new," while the Structurist develops an entirely new vision of both nature and art. The issue was between continuing mimeticism, or inaugurating creation in art.*

Monet was the truly great innovator for the post-mimetic period of the 19th century, Cezanne for the 20th century. The latter presented the Cubist method which he had developed out of Monet's Impressionism. Once again the majority looked on with the conservative eyes of emotional Expressionists. Cezanne's Cubism appeared to them merely as an even more dramatic method than Impressionism, for continuing the "new" mimeticism of the old nature image. It followed that Cubism came to be viewed as "no different" from all previous art, as its acclaimed representative, Picasso, insisted.[37] After Cezanne again only one individual clearly discerned the Structurist direction that was forming, and flatly rejected the Expressionist interpretation of Cezanne. This was Piet Mondrian. He not only understood that Cezanne had achieved the Cubist solution, but that he had gone on to Planism.[38] Except for a handful of artists, all post-Courbet innovators remained tied hand and foot to the old mimetic image of nature and art. To destroy the mimetic image beyond the possibility of recognition, to offer this as pure creation, alters nothing. We are only being offered the end of the line in mimetic manipulations. To make the old new is a futility and deception.

The Structurist effort evolved from the analysis of objects as a structural continuum, and finally to the deeper discovery of the creative method of nature as a structural process. A true art of pure creation was the result. The Expressionist effort went from "destruction" to ever more and more destruction of nature objects, hanging on to meaningless mimeticism to the very last. An art of regression, of pathology, was the result. "Modern Art" is fundamentally reactionary. It expresses a morbid fear of the future. It is not an art of hope, but of defeat.

After what has been said, it may seem unexpected to advance the view that all art is both Structurist and Expressionist. To note this, however, permits the summing up of all the differences that have been discussed, namely, most artists seek to be Expressionists at the expense of being Structurists. It is the Structurist who understands that emotions evoke a vacuity if they destroy the *means of expression,* that is, the structural coherence of the work.[38] The Structurist also understands that when a work is merely structured, when it has not been structured along a deeply felt emotional experience, then the means of expression are silent, evoking a vacuity, too. Therefore, the Structurist seeks to create an expressive structure, hoping to reach ever closer to the depths of human experience within nature.

Neither discipline nor spontaneity alone will solve anything. Together they can. Art is no more absolutely certain than it is absolutely uncertain. Art is an adventure of human life within the evolutionary experience of nature as creation. Art thus achieves new creation within the creative universe of nature.

RED WING
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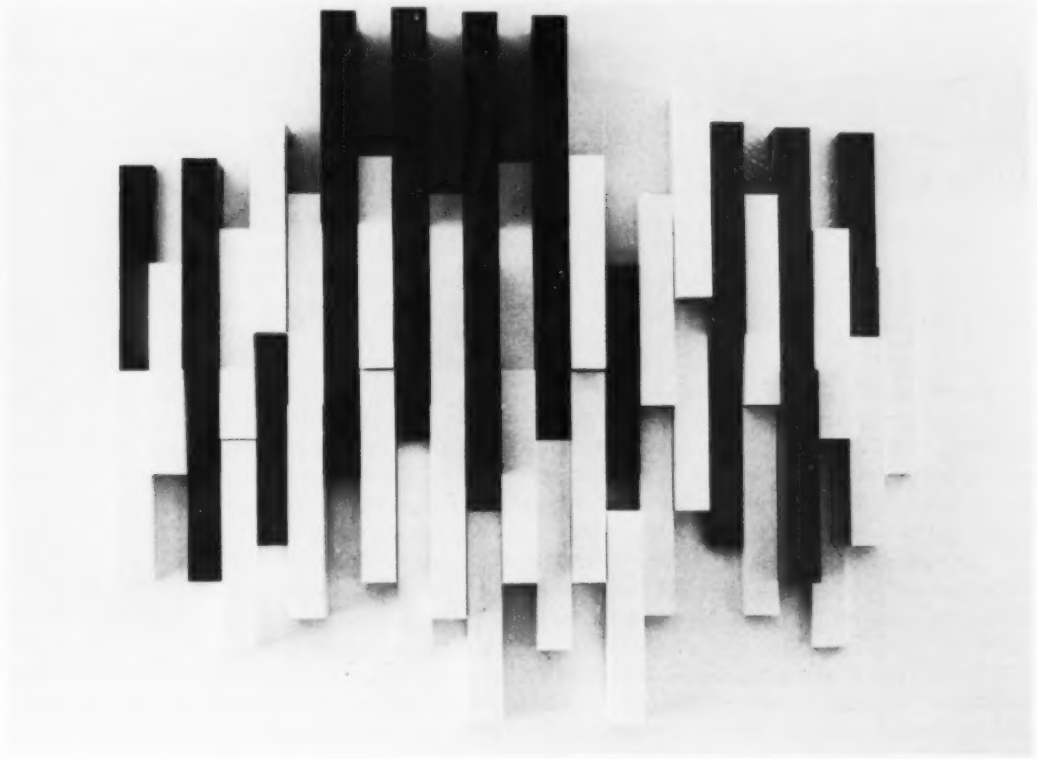
FOOTNOTES

1. Biederman, C.: **Art As the Evolution of Visual Knowledge**, Art History, Red Wing, Minn., 1948. **2.** Ibid. **3.** Biederman, C.: **The New Cezanne**, Art History, Red Wing, Minn., 1958. **4.** See footnote No. 1. **5.** See footnotes Nos. 1 and 3. **6.** Mondrian, Piet: **Plastic Art and Pure Plastic Art**, Wittenborn and Co., New York, 1945, p. 17. **7.** Ibid., pp. 15-16, 17. See also footnote No. 12, p. 323. **8.** Jaffe, H. L. C.: **De Stijl, 1917-1931**, Alec Tiranti Ltd., London, p. 237. **9.** Ibid., p. 251. **10.** Mondrian, Piet: **Neo-Plasticism**, Leonce Rosenberg, Paris, 1920. **11.** Ibid. **12.** Seuphor, Michel: **Piet Mondrian; Life and Work**, Harry N. Abrams, Inc., New York, p 330. **13.** Braque, Georges: "Response a une Enquete." **Cahiers d'Art**, Paris 135, pp. 21-24. **14.** Ibid. **15.** Ibid. **16.** Ibid. **17.** Ibid. **18.** Ibid. **19.** Ibid. **20.** Ibid. **21.** Hope, Henery R.: **Georges Braque**, The Museum of Modern Art, New York, 1949, p. 149. **22.** **Cahier de Georges Braque**, Curt Valentin, New York, No. 82. **23.** Hope, Op. cit., p. 150. **24.** See footnote No. 13. **25.** See footnote No. 6, pp. 17-18. **26.** Gasquet, Joachim: **Paul Cezanne**, Bernheim-Jeune, Paris, 1923, p. 91. **27.** Bernard, Emile: **Souvenirs Sur Paul Cezanne**, R. G. Michel, Paris, 1926, p. 94. **28.** Gasquet, Op. cit., p. 85. **29.** Ibid., p. 82. **30.** Ibid., p. 88. **31.** Ibid., p. 94. **32.** Bernard, Op. cit., p. 88. **33.** Gasquet, Op. cit., p. 84. **34.** See **The New Cezanne**, where this problem is considered in detail. Historically, Structurist art is demonstrated to have begun 80 years ago with Claude Monet. **35.** Ibid., Where the landscape is found to be the centre around which the transition from the old to the new art was realized. **36.** See footnote No. 3. **37.** Picasso, Pablo: "Conversations avec Picasso," **Cahiers d'Art**, Paris, 1935, V. 10, No. 10. **38.** See footnote No. 3.



ELI BORNSTEIN: *Structurist Relief in white, blue, and red, No. 18-II*, 1958-59.

ROMAN PAINTING (POMPEIAN) I Cent. B.C., *Part of Wall from the Cubiculum of a Villa from Boscoreale.* Courtesy of The Metropolitan Museum of Art, Rogers Fund, 1903.

THE WINDOW ON THE WALL

Eli Bornstein

Introduction

Leone Battista Alberti, one of the inventors of artificial perspective, wrote in a treatise on painting in 1435 words to this effect: The rectangular plane that I begin with "I consider to be an open window through which I view (what) will be painted there."[1] Our discussion will approach certain aspects of the evolution of painting from the point of view expressed most clearly by Italian Renaissance artists like Alberti.

It is indeed wondrous to observe that man, throughout time, has consistently extended or burst the bounds of his architectural enclosures with visions, visual images, reflections, and illusions. We see these painted upon walls, doors, ceilings, or flat supports, framed and hung on walls or projected upon screens. Like windows, they lead out into other visual worlds, places and things, and reflect in varying measure not only the eye but the mind and feelings of their creators. Often these images were narratives to engage the beholder, to entice his imagination and senses toward something beyond the barren cubicle of his enclosure. This window afforded an avenue of transport to loftier heights of abstracted contemplation. Attention was focused upon visual symbols, mythologies, or re-creations of nature, and upon self-contained expressions of beautiful order.

The window on the wall then refers specifically to two-dimensional art or painting. To understand more fully the meaning of this window and where it has led us we must look to its evolution. We must scan the mileposts that mark the growth and changes of function and meaning, the revolutions, that pictorial space and illusionism have undergone. To be sure this is far too great and lengthy a task to even attempt to encompass within the prescribed boundaries to which this discussion must limit itself. At best we may hope it can serve as an introduction. Without endeavoring to give even a concise history of this development, we will trace a rough line by our brief stopping points along this long and provocative journey. In speaking of illusionism here we refer to the representation of three-dimensional reality – space, volume, and light and dark—on a two-dimensional surface or plane. Illusionism is used here to make the distinction between the real or actual three-dimensional and the painted or represented reality in two dimensions. It is not used to specifically denote *trompe-l'oeil* painting where illusionsism is used to deceive, trick, or fool the eye for its own sake or as a performance of virtuosity. We are interested here in tracing something of the history of the conflict between three-dimensional reality and the two dimensional reality of the picture plane.

As our starting point we shall take Roman or Pompeian wall painting where windows and doors were actually painted on the walls. From this beginning we shall move on through Renaissance painting and the great advances in perspective. Next the Impressionism of Monet, then the Planism of Cezanne, Cubism, Mondrian, Photography, and finally, Structurism, and the end of the long line of illusionism and two-dimensional windows on the wall. We shall see how Photography emerges as the only remaining channel of our window on the wall development. Then we shall see how Structurism arises out of, and continues, this evolution as three - dimensional constructive p a i n t i n g.

Throughout our concern with the changes from wall-painting to easel-painting, to the Structurist relief, we can not avoid touching upon such attending considerations as the effects upon painting of urbanization and the retreat from nature, the changes in subject matter and development of landscape, and the ramifications of the invention of photography. Further to this it is necessary to include some consideration of the nature and function of the wall, the picture plane, the picture frame and their evolution as conditions of reference within which the two-dimensional illusionistic windows on the wall appear. Some attention to relationships of painting to architecture, developments of perception and visual knowledge must also be included.

Before proceeding to the Pompeian walls, a brief attempt to establish some underlying basis of our investigation is in order. From what we know of art history, man's earliest paintings appeared on the walls of caves and continued for a long period of time as wall-painting. A wall in terms of architecture—however primitive—consists of a separation, usually vertical, that screens or protects man from the outside hostile forces of nature. This usually vertical screen, however thick or thin, generally resting on the floor, acts as a physical support for the roof or ceiling as well as the means for dividing interior space as life became more complex and specialized. With the exception perhaps of very early or primitive architecture, the simplest development of walls was such that their resulting surface was something of a vertical plane having height and width. As a vertical screen-support the wall has essentially persisted as a rectangular plane within and upon which graphic or pictorial expression could take place. The fact that these walls were often punctured by windows and doors or were arched or vaulted by a curved or angular ceiling notwithstanding, this surface resting as it were on the solid horizontal earth, upon which vertical man himself stood, represented the most stable enclosed surface imaginable. Its rigidly defined vertical and horizontal limits offered the most enduring support for the fullest and widest two-dimensional representation or illusion of form and space through line, modelling and color. Without such stable limits—the floor, the adjacent walls, and ceiling which framed the particular wall—one can hardly hazard a guess at how, if at all even possible, painting would have developed. Painting without beginning or end, without defined limits against which unstable forces can interplay and retain their identity is scarcely imaginable.

It is with this basic concept of the wall then that we proceed. Within the bounds of generalization we regard the painting on panel or canvas, the book, the cinema and television screen, as continuations of the early wall concept,made smaller, made portable, built in or placed upon or in front of the wall, but none the less essentially self-contained rectangular wall-planes. The picture frame and its evolution only verify this concept. The picture frame began as architectural illusionism and led to the actual fortifying frame-work, within which the picture could exist, setting it off and distinguishing it from the wall itself and yet acting as the transitional agent between painting and wall, upon which it hung. Down to our own present time we witness numerous modifications that ultimately led to the projection of the picture from the picture frame and the further attempt to free the painting itself from the wall and eliminate the frame.

The fact that our field of binocular vision is actually circular, or, more correctly, ovaloid, and that Renaissance artists like Leonardo were aware of this, has had little effect upon the persistence, over the ages of man, of the rectangular format of visual art over all other geometric possibilities. It is no accident that by and large our great histories of painting include predominantly rectangularly shaped surfaces. Furthermore, it is not merely by chance that our libraries do not contain circular, triangular, or pentagon shaped books and periodicals. One can therefore safely conclude that man's awareness of his vision and of his art being what it was and is, the rectangular format has persisted in two-dimensional visual art because it represents the simplest, most stable, fullest field of distinct vertical and horizontal definition. It has persisted as the distinguishing finite universe of man-made art as apart from the infinite, complex world of three-dimensional reality in time. When we have come to the end of our journey through art in this discussion, we shall see that it may well be that this was the first great step in man's art, of which we are yet part, and that with much further knowledge and time, the

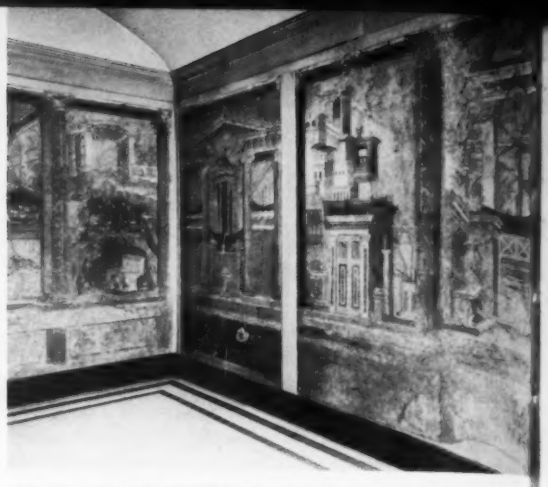
painting art may in the distant future no longer be held within this still necessary frame-work of the rectangle. We shall see that as the window on the wall itself has given way so may the rectangular plane disappear.

The concept of the window is perhaps more simple than that of the wall. The window, like the door, is an opening, a hole, or passage in the wall leading out (or in). With the liberation of man himself from fear and ignorance, doors and windows became larger and more open. The window is an entrance or exit for light and air, but even more it opens the outside world of nature to the man inside. It is an opening "through which I view" as Alberti said, what is there. We shall now turn to the walls of Pompeii, where windows and doors themselves were painted, and views of achitecture, figures, or landscape were painted in the windows.

Part I. Pompeian Wall Painting

We can only pause here to mention what has been referred to as the Greek "revolution" or Greek "miracle" in painting and their inventions and conquests of "matching reality through the new skill of mimesis."[2] This tremendous achievement can not be minimized in spite of the fact that most of what we know of Greek painting has come down to us through written accounts. The familiar account in Pliny about the realism of Zeuxis and Parrhasios well illustrates their achievement. The story tells how Zeuxis in a competition painted grapes that looked so real that some birds tried to eat them. Parrhasios, not to be outdone, painted a curtain over his painting so cleverly that Zeuxis tried to lift it from the panel. Zeuxis acknowledged his being deceived and gave the prize to Parrhasios. Zeuxis had deceived only birds, but Parrhasios deceived an artist.[3] The skill of the Greeks, from all accounts, must have been more than the mere trickery of *trompe-l'oeil* painting, and an understanding of visual appearances and the handling of light and dark through modelling, as well as a knowledge of perspective are indicated.

One of the contemporary observers of ancient wall painting, Vitruvius, the architect who probably stood before some of the freshly painted walls of Pompeii, outlines the history of wall painting in his *De Architectura*: "The ancients began to represent the forms of buildings and of columns, and projecting and overhanging pediments; in their open rooms . . . they depicted the facades of scenes in the tragic, comic, or satyric style; . . . they decorated with a variety of landscapes. In these paintings there are harbors, promontories, seashores, rivers, fountains, straits, fanes, groves, mountains, flocks, shepherds; in some places there are also pictures designed in the grand style, with figures of the gods or . . . the battles at Troy, or the wanderings of Odysseus with landscape backgrounds."[4] It is interesting to note that the first references to the actual theory and practice of perspective in painting also occur in Vitruvius. It is also in his *De Architectura*, probably written between 25 and 23 B.C., that he suggested what later became the generally acknowledged classifications of the four styles of Pompeian wall-painting and its development.



ROMAN PAINTING (POMPEIAN) I Cent. B.C., *Two Walls from the Cubiculum of a Villa from Boscoreale*. Courtesy of The Metropolitan Museum of Art, Rogers Fund, 1903.

Of the four styles which run from about the second century B.C. to seventy-nine A.D. (the final destruction of Pompeii), it is the second or Architectural Style (80 B.C. to 10 B.C.) which we shall be mostly concerned with here. After Vitruvius recounts how "the ancients required realistic pictures of real things" in their much used apartments, he goes on to condemn the "monstrosities" in the decadence of fresco painting which followed in his time with the Ornate Third and Intricate Fourth Styles. "The fact is that pictures which are unlike reality ought not to be approved," said Vitruvius.[5]

We must acknowledge that Pompeian wall painting undoubtedly reflected the culmination of the Greek influence with actual copies and imitations of Greek painting. It also showed other influences of Alexandria and Hellenized Egypt. Another influence seems to have been

Satyr Drinking—detail of fresco from Villa of the Mysteries, Pompeii. (Second-style Decoration).

that of sceneography or the art of stage decoration. For, according to Vitruvius, architectural structures, perspective and illusionistic depth played an important part in the stage decoration of the Hellenistic theatre.[6]

Without attempting a survey of the many aspects of Pompeian painting, and with our focus mostly upon the Second Style, there are some general observations that concern us. We are interested specifically in the remarkable use of the plane surface of the interior painted walls, the representation of reality—space, volume and light—through perspective and illusionism, modelling and chiaroscuro. In other words, our concern is with the revolutionary presentation and function of their wall-paintings as an illusionistic window on the wall. We wish to pause briefly before what the Romans did with their architectural cubicle enclosures through painting.

"The Second Style, a Roman creation of the first century B.C., had moved toward a negation of the structural function of the wall, which became a field for an illusionary world of temples, sacred enclosures, porticoes, and groves, freeing the imagination to pass from the real to the ideal."[7] Other descriptions of the Second Style refer to this passing from the real interior to the un-real, represented, exterior through cleverly devised illusionistic presentations of open country beyond the walls. Quite often columns were painted as being in front of the wall, standing upon a podium, with the idea of turning the room into the semblance of a kind of cloistered court within a landscape visible through the painted openings of the wall. It was in a sense a painted counterfeit architecture that enclosed a counterfeit landscape, all upon the flat surface of a real wall. The construction of illusionistic space and volume upon a flat plane was created through the accomplished devices of a limited kind of perspective using vanishing points and the capable rendering of form. It is noted that quite often the real and pictorial light sources were made to coincide as were the real and un-real architecture. Such illusionistic spacial construction indeed represented a mastery and visual awareness never seen before and not to be seen again until the Italian Renaissance, nearly fourteen or fifteen centuries later.

Why did the Pompeians paint their walls with vistas, with painted architectural elements framing open views? Why did they represent real architecture—exterior architecture—on their interior walls and destroy the flatness of the wall itself with illusions of penetrating and projecting architecture and distant landscape? It is said that the Greeks and Romans would have thought the hanging of framed pictures from cords and nails as absurd or "illogical and inorganic," and would have seemed to them a destruction of the unity of the wall surface.[8] These observations seem convincing.

Both Vitruvius and Pliny remarked that landscape painting—decorative and idyllic—was a Roman invention.[9] There seems to be considerable agreement on this point as well as the Roman achievement of synthesizing architectural illusionism and the rendering of the third dimension on a grand scale. Roman landscape painting indicates an appreciation of nature that far exceeded that of the Greeks. Whereas in Greek art man is the center of importance and where all aspects of nature are personified by gods, in Roman painting nature or landscape painting seems to dominate. It is observable that in most parallel developments in painting landscape is usually arrived at latest as being the most complex. Figure painting and architectural illusionism precedes landscape. The rendering of space and the appreciation of nature's visual beauty and wonder for its own sake seems to be a higher order of development. There are num-

erous plausible claims that landscape painting and its particular use on the walls of Pompeii were a direct result of crowded cities and were the outgrowth of a reaction or revulsion against life in the cities.[10] This is indeed an understandable explanation to our question of why the Pompeians painted their walls as they did. In a crowded city where "land was dear and courts and gardens few," the return to nature if only through illusionistic windows on the wall seems logical.[11] We can see this as a returning call that occurs again and again in history with the rise of urbanization. A recall to nature through art "offers some solace to the jaded, artificial existence in cities."[12] The quiet and peace of nature was probably not sought by the Greeks until the growth of their cities was such that it brought unrest and disquiet. Urbanization produces the necessary din and confusion away from which men flee towards whence they came to sing again the joys of nature. If this occurred as long as two thousand years ago, we can easily imagine man's alienation from nature resulting from the Industrial Revolution and later the Scientific Revolution and the growth of the city.

According to John White, the Second Style of Pompeian wall painting reflects the culmination of a lengthy evolution of antique 'artificial' perspective, of unified vanishing point construction. It also shows the system, described by Vitruvius, in its final break up before more complex, freer, empirical methods, and orientalized influences appear in the Third and Fourth Styles. "In the finest work (of Pompeian wall painting) a new degree of spatial organization is achieved, and a great advance is made along the road that finally leads, after a lapse of nearly fifteen hundred years, to the creation of a theory of synthetic perspective."[13] This next great advance occurs on the same land, not far away in fact, where the window on the wall continues to recreate reality with a clarity of conception and penetration never before accomplished. We move on in time to the Renaissance.

Part II. The Renaissance and Perspective

In discussing the Medieval artist, Erwin Panofsky says, "Between him and reality there hung a curtain."[14] Whereas Vitruvius described the Greco-Roman concern for reality and the real world, the Medieval artist can be said to have had his eyes closed to the observation of

PIERO DELLA FRANCESCA, *detail of fresco at Arezzo, 1452-1466.*

visual reality in favor of traditional codes and rules held fixed by the dominant authority of the church. "The theory of art developed in the Renaissance was intended to aid the artist in coming to terms with reality on an observational basis; medieval treatises on art, conversely, were largely limited to codes of rules which could save the artist the trouble of direct observation of reality (see e.g. Cennini's prescription for applying shadow to the face)."[15] The window on the wall of Pompeii was considerably different from that of the Middle Ages—different in terms of subject matter as well as the means of rendering it. The achievements of the Greeks and Romans in plastic representation of volume and space were temporarily suspended in favor of more primitive and empirical schematizations. The Italian Renaissance, removing the Medieval curtain that hung over the observation of reality, confronted reality anew "without preconceptions." It was from this renewed open look at the world and at man that the further development of perspective and art was achieved. It was also this tremendous "invention" of artificial and synthetic perspective that created and perpetuated "a situation in which the work of art had become a segment of the universe as it is observed—or at least as it could be observed—by a particular person from a particular point of view at a particular moment."[16] The Italians thus not only revived the classical art of antiquity but indeed transcended it.

John White presents a most engaging study and analysis in his recent book, *The Birth and Rebirth of Pictorial Space*. In referring to the development of the representation of space and solidity he clearly traces their successive stages.[17] From the first stage, using the representation of a simple cube as an example, the primitive invariably shows only one side of it in a frontal view, parallel to the picture plane. The second stage involves an attempt to bring a second side of the cube into view so that it lies along side and together with the first side also in a frontal

POUSSIN, *detail—Gathering of the Ashes of Phocion*, ca. 1648.

position. Thus the conflict between the real three-dimensional world and the two-dimensional picture plane is resolved at the expense of the cube by flattening it out and showing both sides at the same time. (An interesting analogy can be found here with respect to the art of young children and primitives in their rendering of pictorial volume and space.) The further developments move on to more complex constructions in which solidity and space are less and less given up to the flat reality of the wall and more and more represented as the eye sees it. Next is the "foreshortened frontal setting" in which one side of the cube is left undistorted parallel to the picture plane and the second or third side is foreshortened and appears to recede into or through the plane. Finally, the domination of the flat surface is overcome by the "oblique setting" in which all the visible sides of the cube are represented as receding. White goes on to say that "This evolution was accompanied by an equal, but slower invasion of the flat surface by three-dimensional interiors."[18] He then shows the development in the most penetrating manner through an analysis of Italian Renaissance art, beginning, as did Vasari, with Cimabue. He thoroughly examines the contributions made by Lorenzetti, Brunelleschi, Alberti, Ghiberti, Masaccio, Donatello, Ucello, Piero della Francesca, and Leonardo. The revolutionary growth of perspective from artificial or simple constructions to the more complex artificial and finally the synthetic method of Leonardo are revealed with unusual insight. In the course of some two hundred years the evolution moves from a frontal, simple artificial perspective, where depth and volume are shallow almost to the point of being flat and dominated by the plane surface, to the highly complex oblique artificial constructions, with numerous vanishing points and where the represented space and solidity dominate the two-dimensional reality of the flat wall. Finally we have the further innovations of Leonardo's synthetic system which tried to compensate for the inadequacies and discrepancies of all previous artificial systems.

Leonardo said, "Perspective is nothing else than the seeing of an object behind a sheet of glass, smooth and quite transparent, on the surface of which all the things may be marked that are behind this glass; these things approach the point of the eye in pyramids, and these pyramids are cut by the said glass."[19] Interestingly enough this sheet of glass is known as "Leonardo's Window" amongst scientists concerned with vision or optics.[20]

According to White, Leonardo's final and most perfected synthetic system used foreshortening not only into the picture plane but vertically and horizontally across the surface as well. In other words, he tried to project the appearance of reality, reduced to "proportions obtained on the intersection of the visual cone by a spherical surface concave to the eye" (or equidistant at all points from the eye) on to a plane or flat surface.[21] "The result," White continues, "is a spherical space which is homogeneous, but by no means simple, and which possesses some of the qualities of Einstein's finite infinity."[22] If the above is correct, we are reminded of the horizontally concave screen used by cinemascope in an attempt to give greater realism to the projected image and from this can not but wonder about the future likelihood of a screen vertically concave as well, or a completely concave plane. However there is by no means agreement on this need for either a curved surface or the curved instead of straight lines on a flat plane involved in synthetic perspective. According to Decio Gioseffi's recent studies, "Our vision of the image in perspective, in theoretically ideal conditions, is the same as our vision of the corresponding objects. This identity is upset neither by the fact that the retina of the eye is a curved surface nor by the fact that the eye rotates in

its orbit."[23] However these differences may be resolved, we are confirmed in the belief that Renaissance perspective did rediscover this optical science of the ancients and developed it to its highest culmination in painting expression.

We have only glimpsed fleetingly at the fascinating history of the development of perspective, but for our purpose have arrived at a point of evolution with Leonardo, the consequences of which can hardly be overestimated. The immense fulfilment reached, as seen from the paintings of Masaccio to Giorgione, the emergence of the framed easel painting from wall painting, and the changes from predominantly figure and architectural painting to landscape painting have been scarcely indicated.

The general contemporary climate is that of dismissal or rejection of perspective. Opposition to intellectual knowledge in art prevents a real awareness of the meaning of the contribution of perspective and of our present relationship to this development. Biederman, Panofsky, and White are among those who bring us closer to a recognition of this tremendously important contribution. The predominantly current fashion amongst art-educators and art historians, as well as artists and critics, is to dismiss perspective as being un-scientific, or wrong, and of little consequence to us today. Can we reject this knowledge which has been so dearly won without losing our foothold in the evolutionary process and reverting to earlier, antique stages of development? For with the end of the Renaissance we by no means come to the end of the story of man's conquests of visual perception and pictorial space. The rejection of perspective as only a Renaissance convention of painting without basis in reality, rejects reality itself or how we see reality with our eyes. The physiological basis of perspective and its application of optical laws of visual perception have not changed. The application of Renaissance discoveries in perspective continue to have a valid basis in natural scientific law as found in optics, photography, the cinema, architecture, engineering, navigation and numerous other fields. In this sense perspective has found far wider application today than it ever had in the fifteenth century. "Renaissance modes of thought are by no means obsolete as far as the problem of perspective is concerned. Most of the arguments used are as valid now as they were in the fifteenth century; Lobachevsky, Riemann, and Einstein have not overthrown Euclid in this connection."[24] Consequently, contemporary indifference toward the contribution of perspective in art would seem to lack any real understanding of perspective, and is merely an illogical reaction to Renaissance art. This reaction seems to be a questionable means of substantiating Modern Art. What actually is being rejected is rather the Renaissance resolution of the conflict between the three-dimensional reality of all that surrounds us and the two-dimensional reality of the picture plane. There is no question that the Renaissance conquest of representing three-dimensional space and volume was achieved at the expense of the reality of the picture plane. The resolution of this conquest, as we shall see, was realized even more fully than that of the *camera obscura*, the peep-hole perspective of Brunelleschi, and the perspective of Leonardo, by the invention of Photography some centuries later in a manner that would have been both staggering and fascinating to the Renaissance artist. The Renaissance resolution of this essential conflict in favor of three-dimensional reality and what the eye sees remains a key resolution out of which painting continued to evolve. The Renaissance window on the wall was like a mirror held up to nature. This concept undergoes further revolutionary changes at our next stopping point—France and Impressionism.

MONET: *Haystacks, end of summer,* 1891.

PART III. IMPRESSIONISM, PLANISM, AND CUBISM:

In arriving at Impressionism we must realize fully that in the intervening period of almost four hundred years, considerable changes and developments occurred after Leonardo. With reluctance we must pass over these many other achievements in which considerable strides were made: on the one hand in the two-dimensional reality of painting and on the other hand in the fantastic virtuoso elaborations of Renaissance perspective theory. We can not pause to con-

CEZANNE: *Mont Sainte Victoire, ca.* 1904-1906.

sider the bursting of ceilings and walls that followed with masterful displays of illusionism and perspective, nor the many feats in the direction of *trompe-l'oeil*.[25] The further significant changes in subject matter that occurred during this long period must also be left behind. We must turn our attention now to Impressionism and the next great revolution that alters our window on the wall in a manner more dramatic and crucial, in its consequences, than even that of the Renaissance.

John White's penetrating analysis of pictorial space ends with Leonardo's synthetic perspective. In the chronology of this evolution, Biederman's writing, particularly his *New Cezanne*, offers much insight into the same processes and in a sense takes up in time where White ends. Biederman's cogent analysis of Impressionism and Monet, Cezanne, Cubism, Photography, and Mondriaan, bring us further along to the present time. We are indebted to Biederman for some of the earliest insights into the meanings and consequences of these developments. "If the Renaissance painter of Florence discovered and developed the optical laws of light primarily in terms of form, now the Impressionists, Monet in particular, discover the structure of light in terms of light as color, color as the spectrum of light."[26]

After Courbet and the invention of Photography, it was Monet who with Impressionism brought forth a burst of sunshine, light as color, never before seen in painting. The triumph of representing light as created by value, light and dark, chiaroscuro, and modelling in the painting of the past was displaced by the discovery of light as composed of all the color components of the spectrum. The old solid form as created with value was shattered by the new shimmering color–light image. George Clemenceau, celebrated statesman and intimate friend of Monet, said, "Monet's eye, the eye of a precursor, is ahead of ours, and guides us in the visual evolution which renders more penetrating and more subtle our perception of the universe."[27] These perceptive words echo those of Cezanne who said that Monet was "the most prodigious eye since there were painters."[28]

With Impressionism linear perspective, no longer dominant as it was in the past, is by no means abandoned. The diminishing of size of objects in space as they recede in the distance, horizons, vanishing points, and the presence of aerial perspective still play an active role in Impressionism. If anything the pyramid of recession, or what is often referred to as depth representation, becomes more shallow and is brought up closer to the surface of the picture plane. It was indeed impossible to explore color-light structure and still retain the old retinal image structure of represented space and volume through line and value. Monet's use of artificial or simple linear perspective brought further to the fore the emerging conflict between painting and reality. It was Cezanne who came to full grips with this conflict. Cezanne alters further the use of perspective, as Biederman has shown, flattening the receding pyramid of depth even further against and parallel to the picture surface with his final color planes.[29]

Cezanne's Planism was the next great revolution and was the child of Renaissance art and Impressionism. His contribution stands out as the last vital turning point in the history of two-dimensional painting. In a sense, Cezanne's use of perspective could be considered a culmination, after four hundred years, of Leonardo's great researches into the nature of visual reality and its representation. Cezanne's explorations into nature's reality and the reality of painting parallel and proceed through Leonardo's theory of synthetic perspective, where foreshortening and recession not only occurred into the picture plane but horizontally and vertically across it. This, in a sense, simulated the projection onto a flat plane surface of the image as "obtained on an intersection of the visual cone by a spherical surface concave to the eye."[30] Whereas Leonardo subordinated the flatness of the picture surface to the true representation of the retinal image, Cezanne altered the image in perspective in favor of the reality of the picture plane. This was not achieved by a regression to earlier primitive means. Thus Cezanne made the greatest step

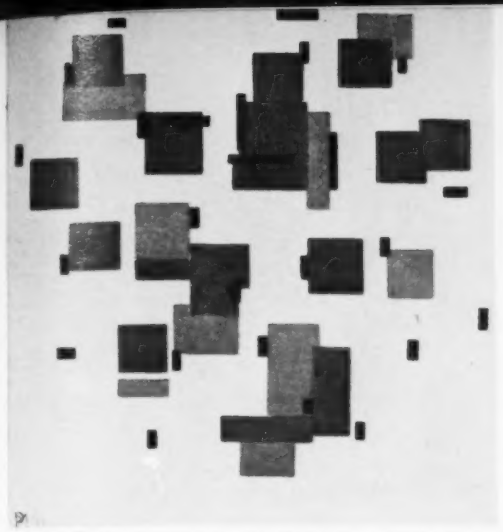
towards resolution or reconciliation of the conflict between three-dimensional reality and two-dimensional painting. He accomplished this before nature, and the window on the wall that he set before us opens up a vista never before seen by man. Illusionism in painting gives way to its last and most meaningful heir, the birth of Planism.

We must pause, if even for a few moments, before Cubism, notably exemplified by Braque and Picasso. Cubist painting seems to revert to an illusionism of solid form. However fragmented and broken up those forms may be, its approach is unquestionably a sculptural one resolved through ancient perspective. Its approach to solid form is notably through line and value (not color) from many view points and presenting in the paintings many vanishing points. The repeated references by so many writers to the time-space aspect of Cubism has, it seems to this writer, been greatly over stressed, far beyond its actual correspondence to Cubism. It seems too often an attempt to give Cubism an air of respectability and meaning borrowed from its contemporary science, such as Einstein's theory of relativity and the fourth dimension. Cubism's arbitrary use of multi-vanishing points, with the subject matter fragmentized into cubic and planar segments seen from multi-view points, all presented together into one rhythmically organized whole, was undeniably a step toward the disintegration, not of matter, but of the visual representation of physical matter. In any case, the painting remained a static plane before which the viewer was in no way involved in the actual time-space activity of the artist. This move toward destruction of imitative subject matter was never quite accomplished because it was inextricably bound to some representation by its illusionistic preoccupation with form. In Cubism's retreat from the logical consequences of its pursuits, it is interesting to note its use of certain aspects of *trompe-l'oeil* in fooling or playing a game with the eye where actual pieces of real material or objects merge with painted representations of it. Particularly in the collage, in many cases one could not easily discern the real from the illusion. The Cubist window momentarily offers us a promising interlude of broken, shattered, and fragmented sculptural form. An unfinished attempt, finally frozen in its tracks, to resolve the mounting conflict between reality and the picture plane.

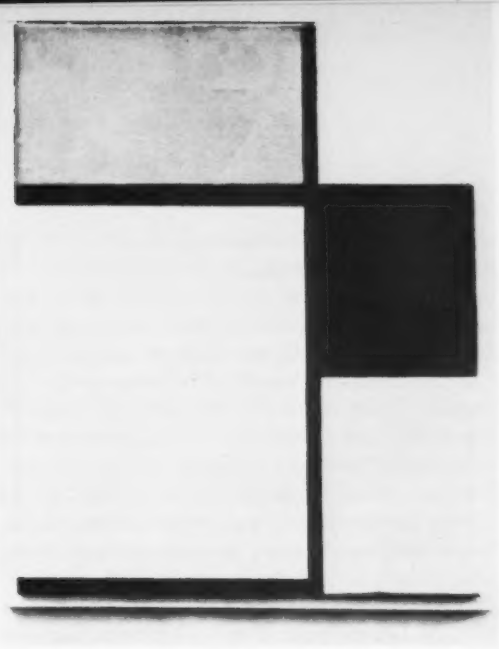
BRAQUE: *Piano and Lute.* 1910. Solomon R. Guggenheim Museum.

PICASSO: *Mandolin and Guitar.* 1924. Solomon R. Guggenheim Museum.

We turn now to Mondrian, who was the only artist working through Cubism to carry the color planes of Cezanne to its conclusion with his notable paintings of 1917-1919 where abstraction and two-dimensional organization are returned completely to the flat reality of the painting surface. The pure relationships of Mondrian's two-dimensional color planes marked the culmination of painting itself in its resolution of the long conflict traced here from the walls of Pompeii. Mondrian brought illusionistic depth and volume representation to an end. He closed the remaining gap of the contracting pyramid of visual space perception, returning it to the intersecting picture plane or the very surface of our window itself. It is noteworthy that this could have been accomplished only by the disintegration and final disappearance of mimetic, illusionistic subject matter as well. The beginnings of this disintegration occurred first with Impressionism and its broken color—as—light image, then continued further with the broken color planes of Cezanne. Cubism's following interval of broken volumes into cubic and planar segments logically led to the next step taken by Mondrian and the flat rectangular color planes in orthogonal relationships to each other and the parallel picture plane. Our window on the wall having moved from the wall itself to the easel painting enclosed by a frame, continued within this rigid setting down through Cubism. Most Cubist paintings strikingly enough appeared most often in heavy, ornately carved and gilded frames. Perhaps this was the work of the picture dealers as an attempt to give the work a traditional museum-like cloak of respectability and value to the buyer. Nonetheless, it was Mondrian who was one of the first painters to project the painting from a very simple frame and who moved toward eliminating the picture frame entirely. In his later Neo-plastic paintings, his continuation of the painting around the projected edges



MONDRIAN: *Composition in Blue—B*, 1917. Kroller-Mueller Museum, Otterlo.



MONDRIAN: *Composition*. 1925. Museum of Modern Art.

of the painting marked a further intimation of what was yet to follow. This also was evidence of the conflicts at work within the absolute strictures of his Neo-plasticism.

PART IV. PHOTOGRAPHY:

Let us now consider what is in a sense the only remaining vital continuation of our window on the wall concept. Photography is the one living extension of mimeticism in visual art. Although its principles were known and used during the Renaissance, as described by Leonardo with the *camera obscura*, Photography as we know it began with Daguerre and Talbot about the middle of the last century. With its tremendous developments since then and its uses in our lives today, Photography has become one of the greatest and most popular means of communication and expression ever known to man. With Photography—black and white as well as color—as exemplified by still and motion pictures, slides, and television, we find a more involved or complex evolution of our earliest Roman window on the wall.

The TV in our homes—though now resting on the floor or on a table—is still a window which one merely switches on or off. The permanent image on the wall is displaced by a continuous procession of ever-changing, fleeting images with the new element of motion and rapid change. Once turned off—like a curtain drawn before a window or painting—the TV stands as a restive, grey-dull, glassy eye, asleep but to be opened at will and leading out to a parade of images within its frame.

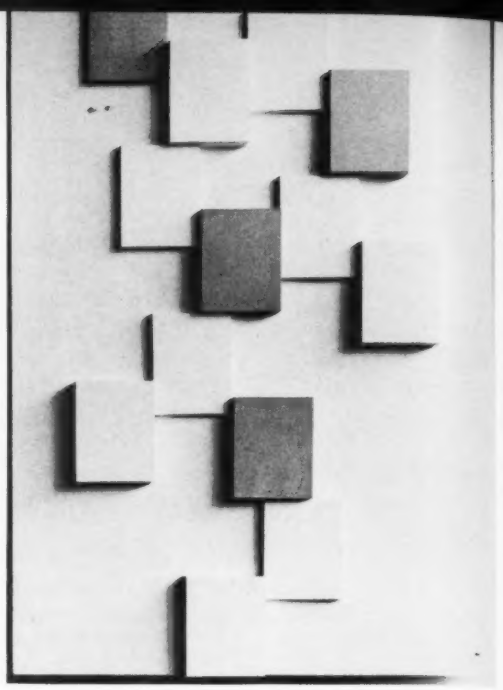
The camera as a recorder of the light image —through value only or through color—is indeed, as Talbot called his published book of photographs in 1844, "The Pencil of Nature" writing its images on sensitized surfaces.[31] Photography is thus the culmination of achieving the representation of the retinal image of reality—depth and solidity illusion—upon a flat (or curved) surface, and furthermore recording the images of form and light in motion and from continuously changing view-points. The art-creations of movies, or TV programs are no longer the work of one man but of many. This fact however does not make them any the less vital as art-creations.

Nature Photograph: E. Bornstein.

The fact that Photography—TV and the Cinema—is often used in a useless or wasteful manner does not in any way vitiate its inescapable descent along the long line of development from the earliest wall paintings. It only indicates our mis-use of a wonderful achievement. Undeniably these mediums are often not enough concerned with creating beauty or presenting meaningful ideas and information for their own sake and instead are used as handy devices for selling commodities or hackneyed entertainment. Undoubtedly Photography has extended the once small and separate market place of the past into our very homes and contributed to turning our cities and our lives into one continuous market place. Nonetheless, the proliferation and dispersal of pictorial images today has its very positive and constructive attributes and would surely present a magnificent surprise to the sensibilities of even a nineteenth century man, let alone one of any earlier century.

The art of Photography in our own time stands as a tremendous realization. Only recently has there begun any major large-scale recognition of the impact and values of Photography as an integral part of the evolution of art. The considerable resistance to the recognition and acceptance of Photography as a fine art is slowly being overcome.

We have reached, after this brief itinerary, an unparalleled fulfilment of our earliest encounter with the Pompeian window on the wall. Through Photography a tremendous scale of highly perfected creation, distribution, and utilization of the represented mimetic image has become possible. The illusionistic image of reality which was the goal spoken of by Vitruvius and later Alberti and Leonardo has been dramatically achieved. Meanwhile through Monet, Cezanne, and Mondrian the age-old conflict between actual reality and the reality of painting has been freed by Photography to resolve itself in favour of the potentialities of painting's reality. It is from this point of view of fulfilment of the illusionistic, mimetic image through Photography on the one hand and the fulfilment of abstract two-dimensional painting on the other that we turn finally to Structurist art.



ELI BORNSTEIN: *Structurist Relief in white and yellow*, No. 6, 1957.

PART V. STRUCTURISM:

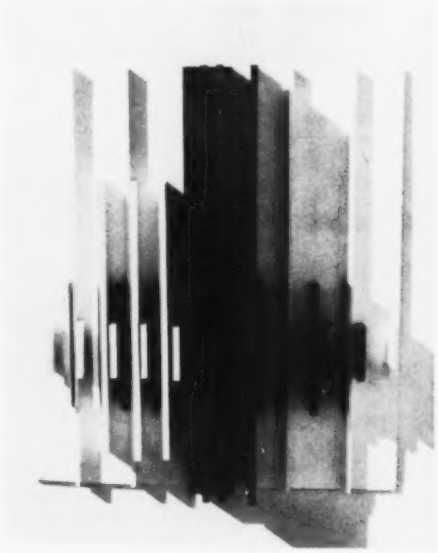
Structurism emerges from three-dimensional painting as evolved through Monet, Cezanne, and Mondrian. The illusionistic window on the wall and the culmination of two-dimensional painting have led to the actual tangible reality of color-volumes and color-planes projecting into space from a plane surface.[32] This constructed, three-dimensional art projects into the room from the wall with its multi-views and facets open to the viewer as he moves about the work. This work can no longer be conceived of as a window, for it is no longer concerned with illusionism, but presents its own reality of three-dimensional color-form in space and light. The perspective of painting is no longer applicable. Modelling, chiaroscuro, and all the previous painting means are no longer useful where volumes, space, planes, and light are no longer represented but are actually there.

Beginning with Mondrian and his move toward projecting the painting out from the frame and eliminating the frame itself, new demands were placed upon the wall and its surroundings. With Structurism the demands are even greater. There is no longer the rigid device of the picture frame to contain the work — protecting it in a sense from surrounding intrusion or distraction. The old picture frame provided a jewel-like setting within the matrix of the wall. This relationship is no longer possible with the Structurist relief, which has

no frame. Its confines on a two-dimensional level are only the limits of its plane surface from which the forms project. Thus its complete, direct exposure and vulnerability demand more than ever the sympathy of the wall, its surroundings, and of light. The wall itself is conceivable as the ground plane from which forms project, in which case the demands are further extended to its surrounding architecture and space. This indeed suggests the new potentialities now possible for an integrated relationship between art and architecture. Such real integration between art and architecture is notably scarce in our own time.

The many facets left untouched, or merely dealt with briefly, in this analysis remain to be filled in or have already been developed by other writers. Nevertheless, this brief investigation has moved from the Pompeian wall to the Structurist relief with an effort to indicate some of the most vital changes that have occurred in this transition and which require further examination.

If one were permitted the luxury of simplified generalization, some of the most obvious and tragic failures of contemporary thought and action, from the point of view of our discussion, could be summarized briefly as follows. Firstly, there is the failure in much present thinking to recognize the full significance of the Renaissance contribution. The attitudes that still regard Renaissance art as inferior and perspective in particular as merely an empirical device, having little basis in reality, flourish in many quarters. For example, perspective is no longer taught in many schools. Perhaps because it was taught so badly it is now discarded altogether. Unfortunately, discarding it prevents the learning of fundamental aspects of seeing and vision, which can not be taken for granted, and prevents the full understanding of whatever else is done. Secondly, there is the failure to recognize adequately the revolutions in art effected by Monet, Cezanne, and Mondrian. Monet and Cezanne in particular have been widely misused, and even ignored, with little cognizance of their real contributions. Finally, there is the failure to recognize the tremendous impact and values of Photography upon art and the visual life of our society. These are the attitudes that have carried on as if Photography never happened or didn't exist, or had nothing to do



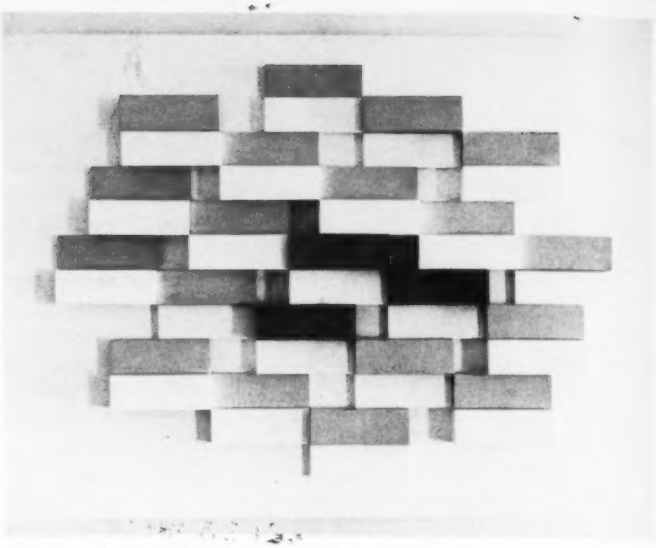
ASPASIA VOULIS: *Structurist Relief in white and red*, 1955.

CHARLES BIEDERMAN: *Structurist Relief*, 1959.

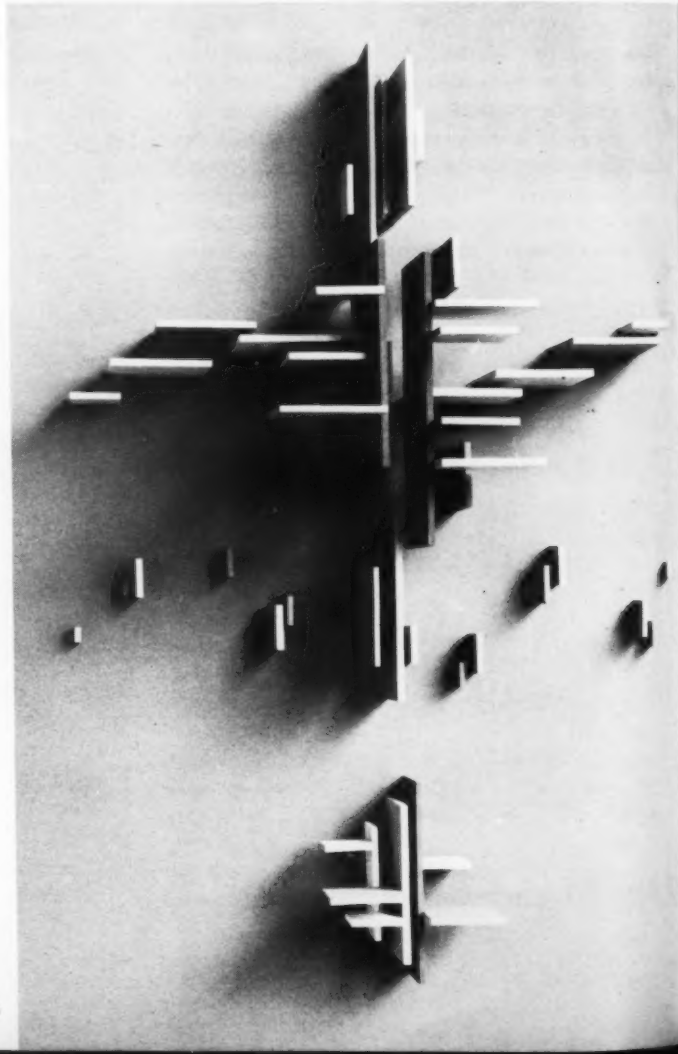
with art. These failures do not lead us toward greater awareness and insight but rather away from critical judgment, reaping harvests of fashionable conformity or confusion.

The momentous realities of the revolutions in art, as well as the social and scientific realities of our own time, require acknowledgement. With each great transition new visions of reality and art were required. We entered upon this vital process of change with the window on the wall of Pompeii. Where the illusionistic window branches off and continues into Photography and where two-dimensional painting reaches its culmination, Structurism begins. We end here with three-dimensional painting, which is no longer a window and which has a new relationship to the wall. We look toward a new wall that itself becomes – through color-form, space and light – an actual creation of luminescence.

Saskatoon, 1958-1960.



ELI BORNSTEIN: *Structurist Relief in white, red, and yellow*, No. 15, 1958. Collection F. S. Mendel, Saskatoon.



CHARLES BIEDERMAN: *Structurist Relief*, 1959.

FOOTNOTES

1. Alberti: **Della Pittura**, fol. 124: as mentioned in John White: **The Birth and Rebirth of Pictorial Space**, Faber and Faber, 1957, p. 122. **2.** E. H. Gombrich: **Art and Illusion, Pantheon Books**, 1960, p. 141. **3.** From Pliny: **Natural History**, 35, 65: as given in M. H. Swindler: **Ancient Painting**, Yale University Press, 1929, p. 233; also in Gombrich: op. cit., p. 206. **4.** Vitruvius, **De Architectura**, VII, 5, 1-4: as quoted in M. H. Swindler: op. cit., p. 338. **5.** Ibid., pp. 366, 367. **6.** Ibid., p. 367. **7.** Karl Schefold: **Origins of Roman Landscape Painting**; in The Art Bulletin, June 1960, Vol. XLII, No. 2, p. 87. **8.** E. Strong: **Art in Ancient Rome**; Scribners, 1928; Vol. II, p. 2. **9.** Karl Schefold: op. cit., p. 95. **10.** See M. H. Swindler: op. cit., pp. 318, 334. **11.** E. Strong: op. cit., pp. 3, 5. **12.** M. H. Swindler: opp. cit. **13.** John White: op. cit., p. 270. **14.** Erwin Panofsky: **Meaning in the Visual Arts**, Doubleday Anchor Books, 1955, p. 277. **15.** Ibid, p. 278, footnote 114. **16.** Ibid, p. 278. **17.** John White: op. cit., p. 26-28; see diagram Fig. I, p. 27. **18.** Ibid, p. 28. **19.** E. MacCurdy (ed.): **The Notebooks of Leonardo da Vinci**, Jonathan Cape, 1948, Vol. II, p. 369. **20.** M. H. Pirenne: **Vision and the Eye**, Chapman and Hall Ltd., 1948, pp. 13-14. **21.** John White: op. cit., p. 208. **22.** Ibid. **23.** Decio Gioseffi: **Perspectiva Artificialis**, as quoted in a review of this book by M. H. Pirenne in The Art Bulletin, June 1959, Vol. XLI, No. 2, p. 213. **24.** Ibid: (M. H. Pirenne: also see his **Vision and the Eye**, op. cit.). **25.** See Fabrizio Clerici: **The Grand Illusion**, in Art New Annual, Part II, Nov. 1953, pp. 99-122. **26.** Charles Biederman: **The New Cezanne**, Red Wing, Minn., 1958, p. 9. **27.** From George Clemenceau: **Claude Monet : The Water Lilies**, Doubleday 1930, pp. 129-130: as quoted by Wm. C. Seitz: **Claude Monet : Seasons and Moments**; Museum of Modern Art, Doubleday, 1960, p. 31. **28.** From Joachim Gasquet: **Cezanne**, Paris: Bernheim-Jeune, 1921, p. 90; as quoted in Wm. Seitz: **Ibid**, p. 7. **29.** Charles Biederman: op. cit. pp. 51-54. **30.** John White: op. cit., p. 208. **31.** As mentioned in Eric De Mare: **Photography**, Penguin Books, 1957, p. 25. **32.** See Eli Bornstein: **Transition Toward the New Art**; in Structure, Vol. I, 1958; Wittenborn, pp. 30-45, and **Structurist Art** in this issue for more detailed accounts of its characteristics and development.

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